

What ISIS Wants / Cuba, Cows and Capitalism

Newsweek®

12.11.2015



BREATHTAKING

YOU CAN'T FIGHT CLIMATE CHANGE
WITHOUT CHINA'S HELP

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12.11.2015 / VOL. 165 / NO. 21



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Concern about pollution is finally pushing China to act on climate change. Slowly. *by Bill Powell*

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From toothpaste to toilet paper, shortages are common in Cuba. But as the country warms to capitalism—and the U.S.—that may change. A prime example: beef.

by Taylor Wofford

COVER CREDIT: PHOTOGRAPH BY SUMOGRAFIKA/GETTY

Newsweek (ISSN0028-9604) is published weekly except one week in January, July, August and October. Newsweek is published by Newsweek LLC, 7 Hanover Square, 5th Floor, New York, NY 10004. Periodical postage is paid at New York, NY and additional mailing offices. POSTMASTER: Send change of address to Newsweek, 7 Hanover Square, 5th Floor, New York, NY 10004.

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PARS International (212) 221-9595 x210 Newsweek@parsintl.com

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PUBLISHED BY

Newsweek LTD, a division of IBT Media Group LTD

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TURKISH CHIEF OF STAFF/REUTERS



BIG
SHOTS

TURKEY

Honor Guard

Ankara, Turkey—Turkish soldiers carry the coffin of a Russian pilot, who was killed when Turkey shot down his jet, to a Russian aircraft at Esenboga Airport on November 30. Turkey says it shot down the Su-24 fighter jet after it violated Turkish airspace on November 24 and ignored numerous warnings to turn back. Russia, however, says the jet never crossed into Turkish territory and called the incident “a stab in the back.” Both Turkish President Recep Tayyip Erdogan and Russian President Vladimir Putin have refused to apologize.

U.S.A.

Big Brother

Chicago—A protester confronts a police officer in downtown Chicago on November 25 after the release of a dashcam video showing Chicago police officer Jason Van Dyke shooting to death Laquan McDonald, a black 17-year-old, as he was walking away from police. It took a year and a public records request for the video to be released.

Van Dyke, who is white, was charged with first-degree murder the day before the footage was made public.

MAX HERMAN









CENTRAL
AFRICAN REPUBLIC

Brothers and Sisters

Bangui, Central African Republic—Pope Francis waves to a crowd en route to the Central Mosque of Koudoukou on November 30, on the final day of his African tour. A two-year civil war has divided the country along mostly religious lines and killed more than 6,000 people. Under the watch of U.N. peacekeepers, the pope bowed toward Islam's holy city of Mecca and sat next to the mosque's chief imam to pray. "Christians and Muslims are brothers and sisters," he said. "Together, we must say no to hatred...perpetrated in the name of a religion or of God himself."



JEROME DELAY

BIG SHOTS



U.S.A.

Pro Life?

Colorado Springs, Colorado—Robert Lewis Dear Jr. is taken into custody outside a Planned Parenthood clinic on November 27. Dear is accused of killing three people, including a police officer, and injuring nine more when he opened fire and barricaded himself in the clinic. Although investigators have not stated a motive, comments Dear is reported to have made during his arrest indicated he may have been motivated by anti-abortion rhetoric.

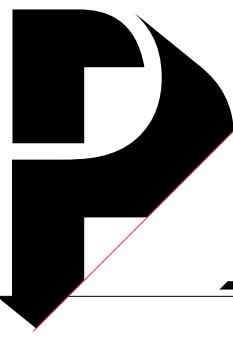


ISAIAH J. DOWNING





ISAIAH J. DOWLING/REUTERS



PAGE ONE

EGYPT

ISIS

TURKEY

POLITICS

RUSSIA

SYRIA

THE SCOOP

KNOW THY TERRORIST

Scorning the refugees from Syria is doing ISIS a huge favor

THEY ARE CONVINCED the world is reaching End Times, the apocalypse foretold in Scripture. They believe Jesus the Messiah will then return to join the faithful in a battle against the antichrist. The glorious confrontation will be won, with Jesus and his followers reigning supreme after the defeat of evil.

And who are these believers? No, not evangelical Christians—they're the members of ISIS.

If that's surprising, it reflects the general lack of understanding about this group. That Jesus will return in humanity's last days is a tenet of fundamentalist Islam and is a driving force behind some of ISIS's decisions. Unfortunately, many Americans have fallen prey to the idea that studying the enemy is a sign of placation or weakness. Too many people—led by disingenuous or ignorant politicians—take pride in their refusal to make the militarily essential decision to learn about the extremists.

That is not analysis from armchair warriors. The importance of learning about the adversary is accepted military strategy, included in *The Art of War*, the ancient Chinese treatise on

combat attributed to a general named Sun Tzu. The book is considered so important to warfare tactics that it is required reading for all CIA officers and is taught at every American military academy. It states, "If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat."

When it comes to ISIS, our failure to understand the enemy is clear in the fumbling, self-defeating way the United States has handled the problem of Syrian refugees fleeing the violence inflicted by militants and the government of Bashar al-Assad. Driven by fearmongering primarily pushed by Republican governors and presidential candidates, Americans are frightened that terrorists might hide among refugees brought into the country. This is a nonsensical construct built on ignorance; ISIS does not need refugees to infiltrate the West. Thanks to its relentless propaganda on social media that is aided by ignorant American politicians, ISIS has recruited thousands of residents in Europe and a few dozen in the United

BY

KURT EICHENWALD
 @kurteichenwald



+
**THIS CRUSADE
WILL BE TELEVISED:**
Making the fight
against ISIS a war
against Islam helps
the enemy and
alienates millions
of potential allies.

States, according to the CIA. And they, obviously, do not need to pose as refugees.

"It is true that ISIS could exploit the crisis to insert operatives into Europe," according to Aaron Zelin of the Washington Institute for Near East Policy. "At the same time, however, one must remember that the group already has thousands of members with European Union passports and has very good document forgers. Therefore, the sole reason for nesting additional operatives in the refugee flows would be to spark a backlash against Syrian and other refugees as well as the native Muslim populations."

So the extremists have easier ways to enter the United States than by posing as refugees. This is important to consider because by keeping refugees out, American politicians are aiding and abetting ISIS (and accomplishing nothing). Ironically, the flow of Syrians away from Islamic countries infuriates the group, since it undermines ISIS's claim that it is forming an Islamic empire that will protect devout Muslims. Essentially, every Syrian family that takes the dangerous trip to other countries communicates to Muslims worldwide that they would rather risk death than remain near ISIS.

In response, the group has released at least 12 videos attempting to persuade Syrians to stay put. The videos warn Syrians fleeing to the West that they will be forced to convert to Christianity—a claim they back up with reckless statements by Western politicians and commentators. Spokesmen on the videos say Westerners will attack Syrians, then they show film clips of police beating refugees in Europe. They say refugees will be treated with contempt, and they have lots of evidence backing up that charge.

In other words, those in America and its Western allies who refuse safe haven to Syrian refugees out of misplaced fear that terrorists might slip in alongside them are doing ISIS's work. "The refugee baiters, their rhetoric and their proposed policies will lead to self-fulfilling ends and make everyone less safe," Zelin says.

Ignorance of ISIS is also driving calls for simplistic military solutions. This relates to the group's belief in the End Times. In 2014, ISIS waged a bitter fight against other Sunni Muslims to gain control

of Dabiq, a Syrian town of no strategic significance. Yet it is there, according to an Islamic prophecy, that the battle against the antichrist will be fought. And now, as more countries join the fight against ISIS, its members cheer—believing the prophecy that 80 flags (nations) will gather in Dabiq to wage war, with Jesus leading Muslims to victory is coming even closer.

The Antichrist in this battle is a liar with one eye, and some followers of ISIS believe they know his identity. The indispensable book *The ISIS Apocalypse* by William McCants of the Brookings Institution quotes a tweet by an ISIS acolyte following the attack on the *Charlie Hebdo* newspaper office in Paris that proclaimed: "The West is the one-eyed deceiver."

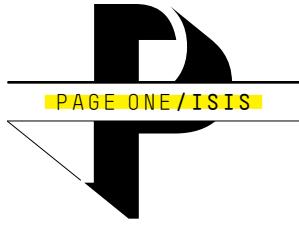
Why is this important? Because it tells us ISIS fighters will not run from a military confrontation; they crave it. Its members do not fear death in battle; they pray for it. American politicians who proclaim they will terrify ISIS with their commitment to fight do not understand what motivates the enemy. Saying, "We will look for you, we will find you, and we will

HEARTS AND MINES: General James Terry, who's running the U.S. military operation in Syria, knows that propaganda is one of ISIS's most potent weapons.

+



MARK WILSON/GETTY



kill you,” as Marco Rubio did in May, might satisfy tough-guy emotional impulses (his words are plural versions of sentences straight out of the action movie *Taken*), but they are promises that bring joy, not fear, to ISIS fighters. Calling for the bombing of refineries, as Donald Trump wants, accomplishes nothing; putting boots on the ground in Iraq, as Jeb Bush and Ben Carson have demanded, would drive away the Iranians fighting there while leaving ISIS’s primary stronghold in Syria untouched. Of course, this does not mean the West should abandon military strategies; the American-led campaign called Operation Inherent Resolve has shown effectiveness in driving back ISIS. What is clear, though, is that politicians who build their strategies under the belief that Sunni fighters can be frightened by promising more bombs and troops are as deluded now as they were when America invaded Iraq in 2003.

Fortunately, even if the politicians do not understand ISIS, military strategists do. In 2014, government strategists from more than 30 countries gathered at MacDill Air Force Base. There, according to two military officers who attended, the group engaged in “red teaming,” which involves anticipating what the enemy will do. The issue of the End Times was discussed, as was the fact that the prospect of death would not frighten ISIS fighters.

The strategists also assessed ISIS’s strengths and weaknesses. Two are important here. One limitation is that ISIS has no real allies among Arab powers—even Al-Qaeda is an enemy. That is why it engages in grotesque barbarity against Syrian and Iraqi Muslims; ISIS wants to force people to choose sides. Join them and enjoy their protection, reject them and die a horrible death.

The strategists at MacDill concluded that ISIS’s strength comes from persuading Muslims worldwide, particularly in Europe, that the West wants to destroy Islam. Unfortunately, many politicians seem determined to reinforce that message here.

For example, the argument that Islam is a religion of pure violence is idiocy. (For those who point to the brutality in portions of the Koran as “proof” that all Muslims are violent, read the Old Testament; slaughter and torture in Scripture are commonplace.) According to the CIA, ISIS fighters are just 0.002 percent of the world’s Muslims, slightly more than 30,000 people. To give a sense of scale, a greater

percentage of Americans showed up this past August in Carver, Oregon, to bob on rubber rafts down the Clackamas River for the Big Float 2015 celebration.

There are, however, Muslims who, while not yet violent, are open to claims that the West is engaged in a battle against Islam. When knuckleheads march with assault rifles outside of American mosques, ISIS tweets the news as proof that the West wants to destroy their religion. When Trump proclaims American Muslims should wear badges, there is dancing at ISIS camps as militants spread the word across the Internet. When Republican politicians demand that President Barack Obama say America is fighting “radical Islam,” ISIS cheers; the term is avoided not

FOR THOSE WHO POINT TO THE BRUTALITY IN PORTIONS OF THE KORAN AS “PROOF” THAT ALL MUSLIMS ARE VIOLENT, READ THE OLD TESTAMENT.

for political correctness but because it is considered a *compliment* among fundamentalist Muslims. In other words, bandying about the term makes ISIS more attractive to Muslims who are on the fence about whether to join.

So America and its political leaders have to decide: Will they continue to condemn as weak those officials who attempt to comprehend ISIS? Will they allow fear to strengthen the enemy? Will they keep trying to insult jihadis by calling them practitioners of radical Islam, even though doing so delights and strengthens the enemy?

It is more important to *be* tough than to *sound* tough. That lesson, combined with greater amounts of courage and humanity by America’s leaders and its citizens, is the prescription for victory against this zealous foe. ■



LAST STOP ON THE CAMEL TRAIN

Egyptians don't like camel meat anymore, and climate change could be the last straw

FOR OVER A WEEK now, Ahmed Awani has struggled to offload any of the “prime” cuts of camel haunch that dangle on bloodied hooks outside his Cairo butcher’s stall. He’s tried a few gimmicks—“Buy 5 kilos of meat and receive a free pigeon.” He’s careful to beat off the flies that swarm his alleyway in the intense late summer heat. “You need to keep it looking clean,” Awani says, while sprinkling the skinned carcasses with water as passing motorized rickshaws kick up clouds of dust.

But on this day, like most others before it, residents of the working-class Darb al-Ahmar neighborhood in the city’s historic core won’t bite. They have little appetite for Awani’s wares—most of the camels are castoffs from the Giza pyramids tours that were no longer strong enough to bear the weight of camera-laden travelers—and so, after 25 years of plying his trade, the aging butcher is slowly resigning himself to reworking his stock. “People here used to savor camels in the same way as Christians love wine,” he says wistfully, hacking the last edible scraps off a butchered sheep in preparation for the Muslim holiday of Eid el-Adha. “Not anymore, though. Now it’s all chicken, chicken chicken, chicken, chicken.”

Ever since the earliest days of Nile civilization, camels and their meat have been a fixture of Egyptian and Sudanese life. From hauling heavy sacks of grain to market to providing a welcome high-protein treat for laborers, the hardy animals have sustained commerce and rural communities for millennia.

But as millions of villagers flock to urban areas, these big beasts have become less popular. “Ew,” or some variation of it, is the standard response when a dozen residents of Cairo and Assiut, a city to the capital’s south, are asked for their thoughts on the strong, tangy flavor of camel meat. “It’s only good for *kofta*

All this spells serious trouble for the farmers, dealers and shepherds who make their living along the storied camel caravan routes that extend from the Sudanese hinterland to the Nile Delta’s densely populated wetlands. Their profit margins have been thin since a ban on slavery was first enforced a little over 100 years ago. (Human cargo sometimes subsidized the camel industry.) “God knows it’s never been easy,” says Alameen Hammad, a herder at the buzzy livestock market in Dongola, Sudan, as he readies his 70-strong pack of camels for the short, but ferociously hot, hop across the northern Sudanese desert to the Egyptian customs post alongside Lake Nasser. “Even when I began 30 years ago, it was difficult. But not like this. This is brutal.” After losing two camels to masked robbers near his hometown of El Obeid, Sudan, his chances of recouping his family’s investment are low. He has taken to watering his charges once every other day in order to save on expenses.

Looking out over this sprawling bazaar, which stands less than a mile from the Nile, it might appear as if the camel trade is thriving. Over

BY
PETER SCHWARTZSTEIN
 @PSchwartzstein



OVER THE HUMP:
Traders from as far
away as Somalia
and Sudan bring
their camels to the
market in Birqash,
near Cairo.

2,000 grunting, spitting creatures straggle across the scrubland on the edge of the Sahara, periodically lashing out at nearby people and protesting furiously as they're loaded onto trucks.

But part of Hammad and his counterparts' problem is that spiraling costs have pushed the price of camels beyond the reach of many of those who still care to eat them. At nearly \$4 a pound in southern Egypt—compared with just a few cents a pound a few decades ago—it's more expensive here than beef. With about 40 percent of Egyptians earning less than \$2 a day, meat of any kind is a luxury for many.

Mostafa Hassan Ibrahim, the self-described “wealthiest man” at the camel market in Daraw, Egypt, which is just to the north of Aswan, says there are many reasons for the sky-high price of camel meat. Both Cairo and Khartoum have taxed the trade to death, he says, often collectively demanding up to \$250 per animal sold. Violence and instability in Sudan, where seven of its 18 states are at war, including camel-heavy Darfur and South Kordofan, have also exacted a serious toll. “And then there’s the food, the water, the gas. All these things just get more and more expensive,” Ibrahim says, pausing to listen in on a furious haggle, before swiftly darting to the side as a pack of camels, their right forelegs bound, hurtle toward us.

Above all, though, it appears the camel trade has fallen victim to climate change. A severe reduction in rainfall has shrunk grazing lands in Sudan by up to 50 percent, according to the U.N. Environment Program, while desertification has covered many watering holes. “The distances between a lot of the oases are just too great now,” says Mohammed Ahmed Riad, a hardware merchant, who deals in the chains and iron brands

used by camel herders at Daraw. “In a lot of places they now have to go by truck, which is expensive. Everything’s just going wrong.”

Poor conditions in the camel-rearing heartlands appear to have inspired an uptake in inter-tribal rivalries, as struggling clans compete for scant resources. Hammad says members of the Darfuri Rizeigat tribe, who dominate Dongola’s market, are renowned thieves and have stepped up their camel rustling. “They use the *haboob* [sandstorms] as cover,” he says. Rival dealers insist Hammad’s Kababish tribe has a reputation for double-dealing and trading in stolen goods.

Whatever the truth is, it’s clear that the several-thousand-year-old camel industry is close to extinction. If it were to disappear, Awni

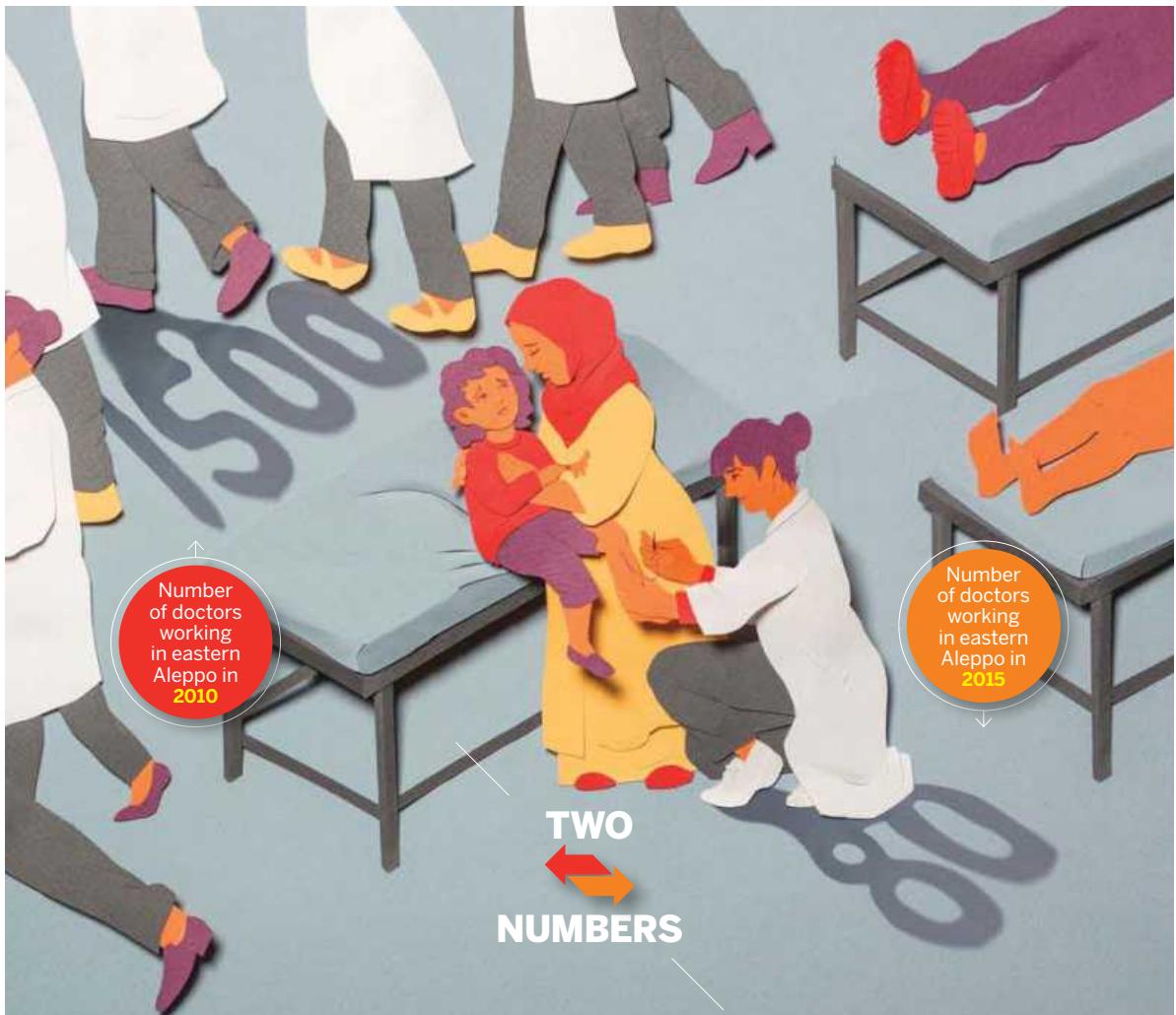
“PEOPLE HERE USED TO SAVOR CAMELS IN THE SAME WAY AS CHRISTIANS LOVE WINE.”



+
CHEW ON THAT:
After a lifetime of carrying tourists, many camels end up at the butcher shop. But most Egyptians think camel meat is good only for kofta—meatballs.

feels the region would lose part of its soul. As the Cairo butcher puts it, “When you hear Egypt, you think camels, no?” ■

This article was made possible by support from the Pulitzer Center for Crisis Reporting.



The Hippocratic Death Warrant

SYRIAN GOVERNMENT FORCES ARE TARGETING DOCTORS AS A WEAPON OF WAR

The number of doctors in Syria's rebel-held eastern Aleppo has been reduced to no more than 80, as the vast majority have been killed or fled, according to nonprofit Physicians for Human Rights.

The city is divided into two sections, with rebels of various factions controlling the east and government forces holding the west. Physicians for Human Rights produced a report on the eastern part of the city, where it said the population has fallen from around 1.2 million in 2010 to around 300,000 since the war broke out in 2011. (The total prewar population

of Aleppo was more than 2 million, making it Syria's largest city.) In 2010, 1,500 doctors were working in eastern Aleppo. Now 80 doctors, at most, are still working, but the actual number at any given moment is between 37 and 50, as these doctors regularly take time off to rest in Turkey and elsewhere after working for days on end in crisis conditions.

The report said around 95 percent of Aleppo's doctors have been killed, detained or have fled. That means there's now roughly one doctor for every 7,000 people in eastern Aleppo, com-

pared with one doctor for every 800 people in 2010. The number of specialists has dwindled, leaving just one cardiologist, one neurologist, one female gynecologist and one or two urologists. Doctors who remain are mostly treating acute injuries, and many are learning on the job, having had little experience before the war in performing amputations or surgeries. Doctors interviewed by Physicians for Human Rights said they live in constant fear of aerial bombardment. Around 200 nurses are thought to be still working with the remaining doctors.

Government forces have attacked 45 hospitals in the past four years, according to Physicians for Human Rights. Since March 2011, 687 health care workers have been killed in Syria, and nearly 300 medical facilities have been destroyed. "We see this as a terrifying precedent for what could indeed be a very effective weapon of war," says Michele Heisler, co-author of the report. "Once you start targeting hospitals so people can't give or receive medical care, it is an insidiously effective way of sowing terror."

BY
LUCY WESTCOTT
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SOURCE: PHYSICIANS FOR HUMAN RIGHTS

Are You Inexperienced?

MILITARY CHALLENGES LIKE ISIS USUALLY HELP SEASONED CANDIDATES, BUT THE REPUBLICAN CAMPAIGN ISN'T PLAYING OUT THAT WAY

"ALWAYS IN political campaigns there's this emphasis on new," New Jersey Governor Chris Christie lamented in a speech to the Council on Foreign Relations on November 24. "New can be wonderful. It's shiny, it's perfect, it's untouched. But it's untested," the two-term governor and former federal prosecutor said. "New seems fabulous, until the moment comes when you need experience."

Christie and the more experienced Republican presidential candidates hope that moment is now. Lagging in the polls, they seek a resurgence after the Paris attacks. Conventional wisdom holds that when security is at stake, voters gravitate toward the adult in the room, and Christie, former Florida Governor Jeb Bush and Ohio Governor John Kasich are eager to show they're the grown-ups.

But as has been the case so many times this year, the American electorate is defying expectations. The Paris attacks are clearly on the minds of GOP voters. A *Boston Globe*-Suffolk University poll of New Hampshire



Republicans found a large plurality—42 percent—rated terrorism and national security as the No. 1 issue facing the country, far outpacing the usual answer: the economy.

The problem for the self-professed adults? Granite State voters rated Donald Trump as the candidate "best equipped to handle the American response to the Islamic State," despite his unsubstantiated claim that thousands of Muslims in New Jersey cheered the fall of the twin towers and his controversial call to bring back waterboarding.

His rationale—"even if it didn't work, they deserved it"—seems to be in sync with the belligerent mood of many voters.

Three-quarters of Republican voters in Iowa support sending ground troops to fight ISIS, according to a new

CBS News-YouGov poll. And 49 percent agreed that Trump is ready to be commander in chief, trailing only first-term Senators Marco Rubio and Ted Cruz.

"Less than one term in the United States Senate has proven to be woeful training, woeful training, for the Oval Office," Christie said in his foreign policy speech, a shot at not just President Barack Obama but also Republican rivals Rubio, Cruz and Kentucky Senator Rand Paul. But it's the adults who are woefully behind.

Christie's remarks follow similar speeches from Bush and Kasich. Like Christie, they emphasized their own résumés and offered few specifics on what it will take to tackle ISIS. Meanwhile, their allies are getting behind a \$2.5 million ad campaign

launched by the pro-Kasich super PAC, New Day for America, hitting Trump for his lack of experience. Last month, it even hired a plane to circle Ohio's Columbus Convention Center, where Trump was speaking, pulling a banner that read, "Ohioans can't trust Trump."

So far, no gimmick has boosted the political veterans. The *Globe* poll has Bush, Kasich and Christie mired in single digits in New Hampshire, the early state that's a must-win for establishment candidates. In Iowa, where retired neurosurgeon Ben Carson was leading but is now slipping, it's Cruz—a senator less than three years—who has risen, not Bush. Even on national security, it's anger, not ability, that seems to be driving the 2016 campaign. ■

FLIPPED HIS LID: Trump, who has never held public office, is getting the biggest surge post-Paris.

BY
EMILY CADEI
 @emilycadei

CONVENTIONAL WISDOM WATCH

Names in the News

UP, DOWN AND SIDEWAYS

 @WisdomWatch



JEFF BEZOS



Amazon CEO manages to launch rocket and land it safely, so that it can be used again. Bezos hopes to make civilian space travel affordable with his Blue Origin company, which has released video of said reusable rocket taking off. Rival Elon Musk of SpaceX claims J.J. Abrams helped fake the footage.

TALL, DARK STRANGER

 Japan's "phenomenally handsome gorilla" gets star treatment with wide-release DVD *Shabani, the Gorilla Who's Just Too Hot*. ABC hoping to sign him for *Dancing With the Stars*.



COOL CHICKS

 Englishwoman knits sweaters to keep her chickens warm. Egg-layers can't acclimate to cold weather after spending their entire lives in cages, need extra insulation. U.S. chickens just move to Tampa.



FORECASTING

 In a protest against their strict dress codes, weatherwomen all over America wear same dress, purchased from Amazon. No one knows what newsmen are protesting with their identical hairstyles.



BEARDS

 From Brooklyn emerges Glitter Beard pirate, who leaves sparkle-flecked trail of facial hair in his wake. The sequined swashbuckler rides subway screaming at commuting hipsters, "Bluebeard was so meh!"



CATS

 After Belgian authorities ask citizens to not tweet information about raids following Paris attacks, social media users flood #BrusselsLockdown with silly cat memes. The only thing we have to fear is Garfield.



AIRPOC IN



AIRYPSI



CONCERN ABOUT
POLLUTION IS
FINALLY PUSHING
CHINA TO ACT
ON CLIMATE
CHANGE. SLOWLY

BY BILL POWELL

IN NOVEMBER 2013, CHINA'S CAPITAL CITY HOSTED WHAT THE RULING COMMUNIST PARTY HAD HOPED WOULD BE A HISTORIC MEETING.

The core purpose of the gathering? The new president, Xi Jinping, and his prime minister, Li Keqiang, were to unveil ambitious economic plans to jump-start a desperately needed new phase of development in the world's second-largest economy.

Instead, the meeting became an embarrassment. Not because of anything the leadership said or did but because of what was going on outside. For days, during and after the gathering, Beijing was enveloped by dense smog. Hundreds of thousands of citizens wore face masks when they had to go outside, many refused to go outside, and 2013 became popularly known as the year of the "airpocalypse." Even the state-owned propaganda organs had to acknowledge the truth: Pollution was "a nationwide scourge," chided the *China Daily* newspaper. "Do we still think that it has nothing to do with us, when people can hardly see each other when they are standing within five meters of one another in some eastern cities? Do we still consider environmental protection something far removed from us when we have to wear a mask so we don't develop respiratory problems?"

At a dinner with friends in Beijing during that plenum, I sat chatting with a young man known as a "princeling"—the son of a senior leader in the party. The smog was all anyone could talk about. The young man, like so many other children of the elite, had gone to school in the West and now frequently traveled to the U.S. on business. He was seething. For the world media to be focused on the filthy shroud choking China's capital, rather than what the party was doing, "was an absolute embarrassment. It has to get fixed." I asked him whether he thought the children of the leaders were communicating that



to their fathers. He gave me an "Are you kidding me?" look, which meant: You better believe they are.

Then came an interesting—and pointed—exchange. Another American at the gathering said, offhandedly, "Yeah, it really would be good if you guys could get a grip on climate change."

The young Chinese man scoffed at her. "Climate change?" he said incredulously. "No one in China gives a damn about 'climate change.' We care about having air we can breathe and water we can drink."

Starting November 30, the world's political and environmental elite have gathered in Paris, under ferocious security, for the 21st session of the United Nations Conference of the Parties, which runs until December 11. Faced with what U.S. President Barack Obama and Secretary of State John Kerry have called the greatest threat to mankind, world



ELEPHANT IN THE ROOM: Two-thirds of China's energy comes from coal. In November, the government confirmed it had underreported how much coal China burns by 17 percent, or 600 million tons a year.

leaders from every nation are expected to sign an agreement to reduce greenhouse gas emissions, the driver of climate change.

For years, China has been the world's leading emitter of greenhouse gases and thus, in the eyes of some in the environmental community, public enemy No. 1. China chafes at the criticism and will sign whatever document emerges. But don't be fooled. Amid the outward signs of cooperation between developed and developing nations on climate change, China remains, at best, wary—and in the minds of many officials at home, deeply resentful—of the pressure the West has brought on Beijing to rein in CO₂ emissions.

'ENVIRONMENTAL IMPERIALISM'

COAL IS THE dirtiest of fuels, and China's "airpocalypse" is intimately linked to its huge and politically powerful industry. China's extraordinary economic rise over the past 40 years has relied on cheap and plentiful energy. Coal makes up 66 percent of overall energy use in China today. Its massive manufacturing sector relies largely on coal-fired power plants. In fact, the government's statistical bureau confirmed in early November that it had underreported just how much coal China burns—by 17 percent. That's 600 million tons of coal a year, or 70 percent of the United States's total annual coal use. Last year, under Xi—who has promised China will begin to reduce its overall CO₂ emissions by "around 2030"—the government approved plans to build 155 coal-fired power plants by 2020. That's just shy of three approvals per week last year.

In the United States, Obama is waging what his

"NO ONE IN CHINA GIVES A DAMN ABOUT 'CLIMATE CHANGE.' WE CARE ABOUT HAVING AIR WE CAN BREATHE AND WATER WE CAN DRINK."

critics call "a war on coal." He views climate change as one of his "legacy" issues, and his Environmental Protection Agency, under the guise of its Clean Power Plan, effectively refuses to sign off on new coal-fired electricity generation (something 24 states have filed suit against). China—along with several of its neighbors in Southeast Asia—believes the United States has tried to extend that war beyond its borders. Beijing, diplomats say, thinks the U.S. has put pressure on the World Bank and the Asia Development Bank to withhold financing from coal-fired power plant projects.

Some in Beijing suspect this was also partly behind Washington's reluctance to back China's drive to launch its so-called Asian Infrastructure Investment Bank (AIIB). "We believe all the talk about lending standards and best practices and all of that—which the U.S. used to hold back its support—was only part of the story. You were concerned we'd finance coal-fired power, and we will," says a member of a Chinese think tank who often advises Beijing's powerful National Development and Reform Commission (NDRC). The Obama administration denies that fear of coal project financing has anything to do with its tepid support for the AIIB.

As the Paris conference drew nearer, the U.S.

publicly heaped praise on China for the targets it has set to reduce CO₂ emissions—reducing their growth and then moving to outright cuts around 2030. “This is the political breakthrough we’ve been waiting for,” cheered Timothy Wirth, a former U.S. undersecretary of state for global affairs and now vice chairman of the United Nations Foundation, when Xi first made his promise to Obama to limit emissions. In private, there is far more skepticism—and for good reason. In truth, the commitment Beijing made was far less dramatic than it seemed. The peak date for emissions was in line with forecasts already made by several state-backed think tanks: The China Academy of Social Sciences said in a 2014 study that slowing rates of urbanization would likely mean industrial CO₂ emissions would peak around 2025 to 2030 and start to fall by 2040.

Furthermore, China has made it clear that it won’t be legally bound by whatever comes out of the Paris summit. “The time line China has committed to is not a binding target,” says Li Junfeng, an influential Chinese climate policy adviser linked to the NDRC. In mid-November, Kerry confirmed that the so-called COP21 agreement in Paris will not be a treaty and thus not legally binding on the signatories.

There are several reasons for that. For years now, ever since the West—the United States in particular—began to obsess about “climate change,”

“THE TIME LINE CHINA HAS COMMITTED TO IS NOT A BINDING TARGET.”

suspicions were rampant in China. At a climate conference I attended nearly a decade ago, one Chinese delegate took to the floor to rant about “outside forces” trying to keep China down by changing the global energy rules overnight: “You got to build your economies on cheap energy—coal and oil—but now that we’re growing fast, you’re not supposed to use coal and oil anymore.” This, he said, was “ladder-up economics.” Just as China began to rapidly climb up the ladder, economically speaking, the West was trying to yank it up.

Despite increasing evidence that climate change is wreaking havoc globally, not much has changed. Gal Luft, co-director of the Institute for the Analysis of Global Security, a Washington-based think tank focused on energy security, spends about half his time in China. He says the phrase often heard behind closed doors in Beijing nowadays is “environmental imperialism”—a desire for the West to impose its environmental and energy use standards on the developing world.



In this line of thinking, China gets little or no international credit for the strides it has made in reducing what could easily have been a far larger carbon footprint. Its massive buildup of hydroelectric power—there are 47,000 hydro-dams in China—as well as its aggressive nuclear power program (29 new plants are under construction or have been approved—units that will more than double Beijing’s nuclear capacity by 2020) together reduce more than 10 times the emissions that the CAFE standards in the U.S. and Europe combined cut. (CAFE, or Corporate Average Fuel Economy, refers to fuel-efficiency standards for automobiles.)

“I don’t think the rest of the world understands how aggressive China has already been in diversifying its [fuel mix],” says Luft, “or how much worse the situation would be had they not.”

CHINA’S ENERGY WAR

LAST YEAR, the Pew Research Center surveyed public opinion to gauge what issues were most pressing to the Chinese people. First was corruption. Second was pollution. Climate change? It didn’t make the list.



FIGHTING BACK: The Xiaolangdi dam, above, is one of China's 47,000 hydro-dams. Renowned pollution fighter Pan Yue, right, was recently promoted at the environmental protection ministry.

Xi has launched an aggressive and unprecedented campaign against corrupt officials, even going after some who were formerly considered untouchable. Most notably, former head of internal security and Politburo member Zhou Yongkang was arrested last year and hasn't been heard from since.

Some believe the anti-corruption campaign is also targeted at powerful vested interests in China that stand in the way of changes Xi wants: economic reform, enhanced energy efficiency, a healthier environment and, yes, reduced carbon emissions. Among the targets in this corruption purge have been energy industry heads who have most resolutely resisted reforms that could lead to greater efficiency and, ultimately, less pollution in China. While Zhou's last job was security czar, most Chinese citizens know that he grew up in the oil industry, where he had (and still has) a vast patronage network. His arrest "sent a pretty clear signal that it couldn't be business as usual in the oil sector anymore," notes Damien Ma, a fellow at the Paulson Institute, a think

tank started by former U.S. Treasury Secretary Hank Paulson that is dedicated to working with China on climate and other environmental issues.

The number of cars on China's streets is surging: Twenty million new ones were sold last year. That growth has made transportation the country's second-largest contributor to both air pollution and CO₂ emissions. For years now, China's envi-



ronmental protection agency has been insisting on improvements to the fuel quality standards at the nation's largest refining companies—China National Petroleum Corp. (CNPC) and Sinopec. The ministry tried to bring pressure, and laws were passed by the National People's Congress, which generally does little more than rubber-stamp the Communist Party's policies. The two state-owned oil giants—CNPC alone employs 1½ million people—simply refused.

After "airpocalypse," the central government could not let that kind of intransigence stand. It finally insisted the refiners comply, and, for good measure, Keqiang recently gave renowned pollution fighter Pan Yue a senior position in the environmental protection ministry.

Pan earned a reputation as an effective fighter within that ministry. In 2005, he halted 30 large infrastructure projects run by state-owned enterprises and in the process made himself a lot of enemies. In 2008, he resigned. He is now head of assessments at the ministry, with a broad mandate that, if he is backed up by those at the top, gives him significant authority to again crack down on polluters.

Pan has also used his anti-corruption campaign to shake up the coal industry. In Shanxi province, the heart of China's coal country, more than a dozen officials have been charged in anti-corruption probes, and rumors are rampant that there are more to come. To understand how significant that was in China, consider this: The first family of the power generation sector in China is hugely influential. The governor of the Shanxi province is Li Xiaopeng, former CEO of one of the country's largest electric utilities.

Li's father is Li Peng, who was Deng Xiaoping's premier and the hard-liner who infamously advocated most vociferously for the crackdown in Tiananmen Square in 1989. Until now, few had had the stomach to take on China's coal lobby, because few wanted to mess with the Li clan.

Xi's attack on coal interests has sent a sharp signal that change needs to come to a hugely corrupt and environmentally damaging industry. Environmental activists in China have been heartened. But it's important to remember that the Chinese government's goals do not jibe completely with the anti-coal desires of the climate change movement.

According to industry sources, consultants and representatives of nongovernmental organizations (NGO), Beijing seeks to make the coal-fired power plant industry more efficient—and in the process,

LAST YEAR, CHINA APPROVED PLANS TO BUILD 155 NEW COAL-FIRED POWER PLANTS BY 2020.

cleaner. And it is succeeding. The 155 plants approved in 2014 will generate significantly more power per unit of coal used than plants built 20 years ago, and they are far less polluting. And last year, China "pre-washed" more than twice as much coal as it did the previous year before burning it, a key step in reducing particulate emissions. But the power plants still emit significant amounts of CO₂. Thus, as Luft says, "coal is still the elephant in the room, and you're not going to wean China off of it as fast as a lot of people would like. That's simply a fact."

CHANGE YOU CAN BELIEVE IN...EVENTUALLY

FOSSIL FUEL USE is not the only area in which change is not coming as quickly as many in the West would like. For over a decade now, environmentalists have waxed rhapsodic about how, because of its population size, China would be able to scale any number of new, environmentally critical technologies—from renewable energy like wind and solar to millions and millions of electric cars. To date, renewable energy plus nuclear (including hydro) accounts for just 10 percent of China's overall electricity generation. By 2020, it plans to raise that to 15 percent. And of the new cars sold last year in traffic-clogged China, less than 1 percent were electric.

The problem: Renewable energy and electric cars need a new electricity grid, a so-called smart grid



+ SMOG ALERT: Holiday traffic returning to Beijing in October, above. At right, performance artist Kong Ning wears a wedding dress decorated with 999 face masks, in a protest over air pollution in 2014.

that can store energy when it's not needed and have it ready when it is. China's grid, for the most part, is 20 years old. It's reliable and brings electricity to the entire country (unlike, for example, India, the second most populous nation in the world, where 400 million go without electricity). But it is a dumb grid, and it will take a long time to change that. China, most analysts believe, will get there. But it is likely to take two decades or more. "People still need to be patient, and understand where we are in our development cycle," says the academic consultant to the NDRC.

After a decade and a half of investment-led growth, which fouled the air and the water, that development cycle is now changing. The economy is slowing and will not go back to the 10-percent-a-year days. Consumption is now starting to supplant



investment as the engine of growth, which will benefit the environment. And the waning investment boom leaves in its wake a much more energy-efficient industrial base.

Consider Dongfeng Motor Corp., a legendary state-owned auto company. In 2002, I visited one of its first factories, outside of Wuhan in central China. The plant had been built way up in the mountains during the Mao Zedong era. It was a location rooted in security, not commerce. ("Dig deep and love the motherland" was a slogan of the time.) The factory belched out smoke, and there was no industrial robot to be seen—only thousands of workers toiling on an assembly line that looked like Detroit circa 1950. Today, the old plant is long gone; in its place is a modern facility that employs 5,000 fewer workers but churns out twice as many cars a year as it used to. And, the company says, it consumes much less energy doing so.

There is still powerful resistance to economic and environmental change. What was true in Pittsburgh, Germany's Ruhr Valley or the environmental catastrophe that was the Soviet Union is now true throughout China: Powerful economic interests dig in their heels. At a recent daylong seminar on energy policy and the environment, the NDRC—the

key economic-planning agency in China—outlined priorities for creating a more efficient, cleaner and more sustainable energy sector. It laid out goals for boosting natural gas use instead of coal in electric power plants, for example, and explained its ideas for moving China more rapidly to a smart grid.

NGO representatives had been invited to the meeting, as were many constituents whose industries would be affected by such reforms. When the floor was open for responses, an executive from State Grid Corporation of China, the organization that oversees all of China's electric utilities, methodically picked apart the NDRC presentation. This isn't possible, at least not now, he said of one proposal. This can't happen either. The smart grid will take a lot of time and is very expensive. And so on.

"It was," says an NGO rep who was present, "amazing—and discouraging." Here was one of the country's most powerful vested interests in effect saying, "Slow down here, folks. We're not with the program."

As the world toasts with champagne glasses raised in Paris, celebrating progress in the climate wars, remember that scene. In the nation that emits the most greenhouse gases in the world—and confronts more dire environmental problems than anyone else—nothing is going to come easily. ■

= CARNE =
LOMO - US - 30"
RECORTES - US - 25"
COSTILLAS - US - 25"
MANTERA - US - 10"
HUESO - US - 5"
BISTEC - US - 45"
PIANTE - U -
HIGADO - US -
PIZARRA - US - 30"
GRACIAS

T-13



WHEN THE COWS COME HOME

FROM TOOTHPASTE TO TOILET
PAPER, SHORTAGES ARE COMMON IN **CUBA**.
BUT AS THE COUNTRY WARMS TO
CAPITALISM—AND THE U.S.—THAT MAY
CHANGE. A PRIME EXAMPLE: **BEEF**

BY TAYLOR WOFFORD
WITH HANNAH BERKELEY
COHEN IN HAVANA

CHE BURGERS:
Beef is a rare com-
modity in Cuba,
even at this butch-
ershop in Havana's
thrrumming Maod
Catedral Market.



EVERY TIME GATOR EJACULATED, DAN MARVEL GROSSED 10 GRAND.

At the time of his death last year, the bull was a ton and a half of genetic perfection—or as close to it as has ever been recorded for his breed (Red Brangus, a dewlapless, humpbacked strain, three-eighths Brahman, five-eighths Angus and usually russet in hue, hence the name). And he was prolific: Marvel, his owner, says with pride that Gator once produced more than 400 “straws”—a half-cubic-centimeter swizzle stick of bull semen being the standard measure—from a single ejaculation.

Gator’s semen was white gold because, drop for drop, the seed of a prize-winning bull is worth more than gasoline, penicillin and human blood combined. It’s not the most valuable liquid in existence (that distinction goes to scorpion venom, which has medicinal properties), but it’s close.

Five years ago, Marvel received an intriguing phone call from John Parke Wright, a wealthy investor from Naples, Florida. Wright knew someone who wanted to create a beef cattle herd, and his client needed a hefty amount of Gator’s semen: thousands of straws. The deal would earn Marvel and his wife, Sandra, \$50,000, a huge haul for them. The only catch: They had to make it happen in one of the least business-friendly places on earth: the communist island of Cuba.

Six months after that chat, the Marvels were in Havana. They met Wright at a nondescript office building in Miramar, the city’s diplomatic quarter, which serves as the headquarters of the National Enterprise for the Protection of Flora and Fauna, the Cuban equivalent of the Environmental Protection Agency. A receptionist led them to a small conference room with a dark wood table and chairs, the walls lined with portraits of the Castros and other Cuban leaders. As they sipped espresso and bottled water, an elderly Cuban official walked into the room and greeted them. He kissed both of Sandra’s cheeks—the Latin kind of kiss, as she describes it. His name was Guillermo García Frías, a *comandante* in the Cuban army who fought alongside the Castros during the revolution, a former vice president and current head of the environmental agency.

García, who reportedly saved Fidel Castro’s life during the revolution, is Cuba’s cannier cattleman, Wright says. He had a new ranch called El Macho, he told the Marvels, and he wanted to turn it into the first large-scale, high-quality beef production operation on the island in more than five decades. He had the land: 150,000 acres in Camagüey. What he didn’t have: cows or capital.

There are two ways to increase the size of a herd. Go the natural route (put bulls and heifers together and wait), which can take years, or import a

large number of heifers (20,000 would suffice, Wright ventures) and artificially inseminate them—but that method can take a lot of cash. “We’re talking about a serious investment,” he says.

Still, García chose the latter option. A couple of weeks after meeting with the comandante, the Marvels received in the mail a check for about \$50,000. What García got in exchange was more than just spunk; it could be the seeds of a capitalist revolution.

¿DÓNDE ESTÁ LA CARNE?

IN CUBA, shortages—from toothpaste to toilet paper—are a fact of life. Food is no exception. Beef, once a staple of



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SEED MONEY: This new herd at el Macho Ranch is the product of bull semen imported from the U.S.

the Cuban diet, can be next to impossible to find on the island. Sometimes, it will disappear from markets without warning for months, says Alexis Naranjo, whose restaurant, Los Naranjos, recently debuted in Havana's tony Vedado neighborhood. "I can't sell it," he says, because "there isn't any place to buy it." When you can find it, it's exorbitantly expensive, which means tourists are among the few people in Cuba who consume it.

Like most restaurant owners here, Naranjo sometimes turns to the thriving black market to meet his needs. But he won't buy beef there. "If you get meat and the police find out, they will close the restaurant," he says. It's not that the government is concerned about the health ramifications of eating black market beef, which is mostly pilfered from state-run butcher shops. It's because beef is so scarce, the government controls who gets *carne* and who doesn't. To protect its monopoly, the state even passed legislation making slaughtering cattle without explicit government permission a crime carrying a sentence of up to five years in prison—even if you own the cow.

The shortage is worse outside the major cities. And the contrast between meat served at Havana's privately owned restaurants and what rural Cubans eat is "shocking," says Parr Rosson, head of the Department of Agricultural

SPURT FOR SPURT, THE SEED OF A PRIZE-WINNING BULL IS WORTH MORE THAN GASOLINE, PENICILLIN AND HUMAN BLOOD COMBINED.



Economics at Texas A&M University and an expert on U.S.-Cuba trade. "There are cuts of chicken you can't identify," he says. "I don't know what they are."

Cubans would like less mystery in their meat, but change happens slowly on the island. *Un poco, un poco*, "a little, a little," as people here like to say. But it's happening, especially with respect to the United States: In April 2009, U.S. President Barack Obama took the tentative first steps to ease the tension between the two countries. The administration lifted restrictions barring Cuban-Americans from traveling to the island and uncapped the amount of money they could send to relatives back home. Havana later implemented reforms designed to encourage small pockets of capitalism. In 2010, the government began allowing more Cubans to work for themselves and to hire others. Since then, the number of small-business owners and entrepreneurs has more than tripled, according to one recent paper.

Now, six years after Obama's first announcement—the Cuban government's arrest and imprisonment of the American aid worker (and alleged spy) Alan Gross in 2009 slowed things down—the relationship between the two Cold War adversaries is finally starting to thaw. Most Cubans welcome this development, but few want things to go back to how they were before the revolution, when Cuba was a de facto colony of Washington and Havana was



a decadent playground for wealthy gringos.

Doing business with Americans presents Cuba with not only an opportunity but also a threat. To improve the lives of their people, Cuban officials are dabbling with capitalism across the economy, including the beef industry. In need of everything from new tractors to plow their fields to wind turbines to upgrade the island's turn-of-the-century electrical grid, they have begun to bargain with businessmen such as Wright and Marvel. But they're afraid of giving away too much in the process—especially to their neighbors up north. So as Cuba transforms and opens to free enterprise, the Communist Party is proceeding cautiously, trying to make sure noth-

CALLING A FOWL:
Food shortages have forced Cubans to get creative, which may mean eating chicken that should probably come with air-quotes.

ing endangers its monopoly on power. As Fidel Castro explained in a 1966 speech, "Revolutions are not undertaken to leave things as they were."

CUBANS ATE DOMESTIC CATS, AND PEACOCKS AND BUFFALO MYSTERIOUSLY VANISHED FROM THE ZOO.

SOVIET SUGAR HIGH

CUBA HASN'T always been a nation with empty shelves, and its beef shortage is a relatively recent phenomenon. In 1958, one year before Castro ousted the U.S.-backed dictator Fulgencio Batista, there was nearly one cow for each of the island's approximately 6.5 million inhabitants. More than 50 years later, there are almost twice as many

"THERE ARE CUTS OF CHICKEN YOU CAN'T IDENTIFY. I DON'T KNOW WHAT THEY ARE."

Cubans, but the country's herds are 30 percent smaller than they were in 1958, according to Carmelo Mesa-Lago, a Cuban-born economist at the University of Pittsburgh.

Most Cubans point to the embargo to explain the state of the beef industry, and many economists agree that it's at least partly responsible. But some analysts say Cuba's socialist system deserves a big part of the blame for the country's economic misery. "You've got a central planner sitting in a high-rise Ministry of Agriculture building in Havana, trying to tell growers in the eastern provinces what to do with their pastures," says William Messina, an agricultural economist at the University of Florida's Food and Resource Economics Department. "What the hell does a person in Havana know? Maybe it's been a rainy summer. Maybe there's been a drought.... Pretty poor decisions get made."

At the root of all Cuba's food woes is its greatest resource: sugar. The island had been almost entirely dependent on the crop since it was introduced hundreds of years ago, allegedly by Christopher Columbus. As Castro put it in a 1959 televised address, "One of our greatest causes of economic dependence on the United States is sugar, and it is imperative that we diversify our production and our markets." Following the revolution, the Castro government announced plans to do just that, but two years later, Havana changed its tack; the Soviet Union offered to pay above-market prices for Cuban sugar in exchange for access to the island. Despite its earlier ideas about diversification, the Castro government again poured most of the nation's resources into sugar. By the 1980s, Cuba was the world's third-largest sugar producer, behind Brazil and India.

Then, in 1991, the Soviet Union collapsed and took Cuba's economy with it. By that time, Cuba's agricultural sector was heavily mechanized, and Moscow was the source of most of what was needed to sustain the industry—from fertilizers to new tractors. Lacking the infrastructure to grow much beyond sugar and unable to command the inflated prices it had enjoyed for 30 years, Cuba had no way to feed itself. This era of Cuban history—euphemistically called the Special Period—saw the average Cuban shed about 12 pounds, according to a 2013 paper published in the *British Medical Journal*. Cubans ate domestic cats, and peacocks and buffalo mysteriously vanished from the Havana zoo, according to *The Economist*.

With some of the best farmland and pastures in the Western Hemisphere, Cubans don't need to eat pets. "Cuba should increase its beef production, without any question," says Pedro Sanchez, the Cuban-born director of the Agriculture and Food Security Center at Columbia University. In four to five years, Cuba could be importing 40 percent of its food, instead of 80 percent. "We have to make a proper plan, but all the elements are there," he adds.

One of those elements arrived by private plane in Havana last year. Inside, supercooled with liquid nitrogen, was a gallon of Gator's goo.

CAN YOU MAKE A BUCK IN CUBA?

EARLIER THIS YEAR, Wright invited me to El Macho to witness what's become of Gator's seed. To reach the ranch, his chartered Chinese minibus

passes through the Sierra del Chorillo nature preserve, one of 48 protected areas managed by García's agency. The preserve is 10,000 acres of pristine wilderness where unshod ponies caper beneath a canopy of piñon pines and fossilized tree stumps jut from the earth.

As Wright steps off the minibus, he introduces me to Barbaro Casa López, the ranch's foreman, an intense-looking man with a blue-black mustache and straw cowboy hat. Casa López is already putting Gator's semen to use, he says, and offers to show us. He leads Wright and me down a muddy lane between rows of enormous, empty pens. In one, about 20 bulls are corralled. These are Gator's offspring, Barbaro tells me. Wright claims they're the first cross between an American bull and Cuban heifers in more than 50 years. They're a year old and fattening up nicely, gaining nearly 2 pounds per day, Barbaro says. They'll keep gaining until they weigh about 1,400 pounds. Then they'll be sent to slaughter.

El Macho turns a small profit, but its earnings are limited because it can sell only to the state, and the state, not the market, dictates prices. In June, Barbaro says, the government increased the price for steers to 2,000 Cuban pesos a head—roughly \$80. The result is that cowboys and ranch owners both earn less than bartenders and taxi drivers in Havana.

The only way to make real money in the cattle business in Cuba is to scale the operation massively. And the only way to do that quickly is with foreign direct investment. That's why Wright is helping García find partners and investors stateside. "It's very simple," he says. García can offer American investors a stake in El Macho—"say \$200 million for 50 percent." That \$200 million will be used to increase the breeding stock and ramp up production of meat.

But many Americans are wary of investing in Cuba because the state almost always insists on having a majority stake in partnerships with foreign companies. And the island doesn't have a sterling reputation in the minds of investors—expropriating billions in assets from U.S. corporations doesn't scream "open for business." Wright insists American companies shouldn't be afraid. It's a myth that you can't

make a buck in Cuba, he says, and he intends to prove it with El Macho. If Americans discover a business-friendly climate here, Wright believes Congress will be inclined to lift the embargo. "We're going to use these cows to break the blockade," he crows.

"Si," Barbaro says. "It all depends on the blockade."

It's not so simple. As part of the thaw, Washington is rolling out incremental reforms, like allowing ferry service to Havana and lifting export restrictions on telecommunications equipment. But Cubans have been hesitant to embrace American investment. "We haven't gotten Cuba to green-light a single deal," says James Williams, president of the lobbying group Engage Cuba. "Part of it is they're just overwhelmed. People from all over the world are coming here like they've never come before."

There are other hurdles too. For the Cubans, the end of the embargo is the next step in the negotiations. But the U.S. sees the end of the embargo as the last step, a reward for progress on human rights, property claims and law enforcement, among other things. "We think Congress would look very favorably on those [changes]," says a State Department official with knowledge of the negotiations, who spoke on the condition of anonymity because the talks are sensitive. "Support would be more attainable if they could make progress."

Maybe, but Congress seems reluctant to let Americans deal directly with the Cuban government, preferring to encourage investment in small businesses. Of course, in Cuba the difference between privately owned and government-owned is rarely clear-cut, says Paul Johnson, co-chair of the U.S. Agriculture Coalition for Cuba. "I don't know if you'll ever be able to draw a distinction," he says. "It's a one-party system, and the government has a lot of control in business decisions." Johnson says U.S. investors should flock to Cuba, even if it means getting into business with the Communist Party, because that's the way Cubans want it. "We need to respect their sovereignty," he says. "It's in the U.S.'s best interests in the long run. Otherwise, you're just laying the seeds of future revolution."

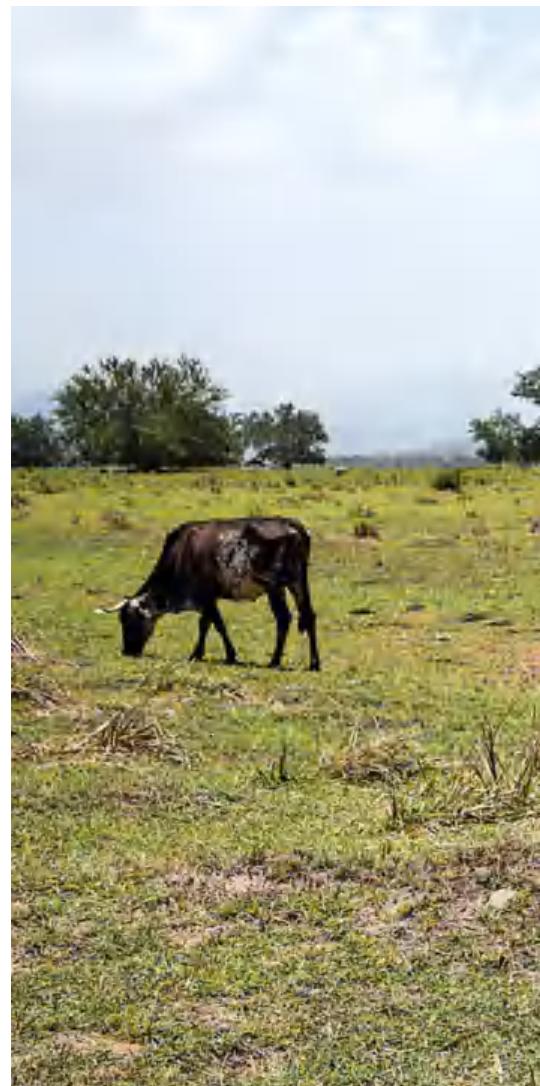
Williams agrees. Most Americans, he says, don't know how to do business in Cuba. The Cubans "have a process," he says, "and companies have been ignorant or naive of that process."

John Parke Wright is not most Americans. He has been doing business in Cuba since the mid-2000s, shipping beef and dairy cattle from Texas, Florida and elsewhere (the embargo on agricultural commodities to Cuba was lifted in 2000). Until Washington and Havana hammer out their differences, Wright is comfortable conducting his business the Cuban way. And for Wright, beef is more than just business. Beef is personal.

YANKEES, WORMS AND TRASH

"THIS WAS my family's land," Wright says, stepping off his minibus and waving his hand at 15,000 acres of Cuban wilderness. He plucks a Romeo y Julieta cigar from the breast pocket of his guayabera, lights it and inhales the smoke. Wright always wears a guayabera when he's in Cuba, but there's no mistaking him for a local. His 10-gallon Stetson, navy Brooks Brothers blazer and ruddy complexion give him away. Americans are a rare sight in Havana, and they are virtually unknown on this stretch of rural highway in the foothills of the Sierra Maestra, some 450 miles southeast of the capital. Except for Wright, who for the past 17 years has been a frequent and quizzical sight here.

Through his mother, Wright is a member of the Lykes clan, the 12th-largest landowner in the U.S., according to The Land Report. With a net worth of \$1.2 billion, the Lykes are the 193rd wealthiest family in the country, according to *Forbes*. Before the Cuban revolution, his family owned two cattle ranches in Cuba, plus various properties in Havana, including the



COW TOWN: Before the revolution, the Lykes ranch was bigger than Manhattan.

city's largest meat-packing plant. Like many Americans who lost wealth during the revolution—or, as many Cubans see it, whose property was returned to its rightful owners—Wright thought his family's riches were gone. Then, in the late 1990s, he says, he met a diplomat named Carlos Lechuga, who was Havana's ambassador to the United Nations during the Cuban missile crisis. "Señor Lechuga suggested I show more interest in my mother's land," Wright says. Before long, Lechuga introduced him to Ramón, Castro's older brother. The two became "dear friends" and traveled the country together, Wright says. After Ramón became too old to leave Havana, his son, Ángel, took his place on Wright's rural sojourns.



"IF THEY THINK THEY CAN STOP ME FROM LIVING ON LAND THAT BELONGS TO ME, AND THEY WANT TO THROW ME IN JAIL, LET THEM TRY."

On the afternoon that I join Wright on his trip to the countryside, Ángel comes too. A portly, amiable man in his mid-50s, Angel has short, gray hair and coke-bottle glasses. Unlike his father and his uncles Fidel and Raúl, he's clean-shaven. As Wright and I survey the land, Ángel takes a *siesta* in the back of the bus.

Outside, butterflies bob in the tall, sun-blushed grass. The flatbed trucks and horse carts that pass for buses and taxis in this part of the country intermittently trundle back and forth from nearby towns. Wild turkeys loiter near a dusty dirt track leading to La Candelaria, one of the two cattle ranches that used to belong to Wright's family. Once, seven royal palms grew here, one for each of Wright's great-great-uncles, who earned the family's fortunes in Cuba. They're gone now. A tumbledown portcullis, 10 or 12 feet of orange brick, is all that remains to mark the entrance. "It's a little sad," he says with a half-smile. "I'm glad they've kept the gate, at least."



+
SHORT SELLERS: The U.S.-led embargo didn't depose Castro, but it did create many hardships for Cubans.

A few miles down the road, a sun-tanned farmer in yellow sweats pulls aside a razor-wire fence to let us inside. Wright leads me down the dirt road to the interior of the ranch, seemingly impervious to the heat, the mud sticking to his shoes or the fat sow that waddles away resentfully at his approach. Soon we arrive at the old ranch house. There are holes in the roof. Inside, the floor is a jumble of broken cobblestones. Shadowed hollows suggest where doors and windows used to hang.

In the 1950s, La Candelaria, which is slightly larger than Manhattan, was one of Cuba's best ranches, Wright says. It employed a dozen or so cowboys who tended 7,500 head of cattle, according to an article from *Fortune* in 1954.

Today, its only permanent tenants are a timorous herdsman and a few dozen rangy crossbreeds. "For 10 years, I've been asking the Castros about why these ranches that were so well-run up to 1959 are idle today," Wright says. "The answer's been, 'It's the blockade. The embargo.' That's a good excuse, but it doesn't cut it."

Wright wants to come back, to restore La Candelaria. But the Cubans have so far responded tepidly to his requests. While they may

need people like him—people familiar with the culture who have a vested interest in seeing Cuba return to prosperity—they are also wary of returning expropriated property. To do so would set a dangerous precedent, one that might see a flood of Cuban exiles and their descendants returning to the island, demanding their land back, or, failing that, compensation for it, which the Cubans can't afford to pay. And fear of the exiles' homecoming is pervasive on the island, says Michael Kelly, a Cuba policy expert and associate dean at the Creighton University School of Law. "That's what the Castro government has been feeding them," he says. The government cannot be seen to be doing business with the exiles, a group it has spent decades denouncing as *gusanos* (worms) and *escoria* (trash).

Wright is adamant about returning to his family's former plot, even though it's illegal in the U.S. for citizens to negotiate with the Cuban government. "If Congress tries to stand in my way, I'll go around them," he growls. "If they think they can stop me from living on land that belongs to me, and they want to throw me in jail, let them try."

And while Wright stands to profit from having his family's land returned to him, he says money isn't his only—or even primary—motive for wanting to return to Cuba. His main motivation, he says, is restoring an industry that can feed the island's 11 million people. That may sound self-serving, but Wright is already rich, and if he wanted to become wealthier, there are easier ways to do so than negotiating with Communist Cuba. "It's criminal," he says. "They're using food as a weapon of mass destruction."

A CASTLE OF CUBAN CAPITALISM

WHETHER OR NOT Wright succeeds, there is one place in Cuba, at least, where beef is not so rare. A morning's drive from La Candelaria is one of the best cattle ranches in the Western Hemisphere. It is called El Alcázar, which means "the castle" or "the fortress." It sits cloistered in the rising limestone foothills of the Sierra Maestra in the country's southeast. El Alcázar is one of the few cattle ranches not nationalized during the revolution. While other ranchers saw their land confiscated, María Antonia Puyol Bravo held on to hers. Wright describes her as Cuba's only card-carrying capitalist.

A diminutive 88-year-old with a crooked smile and mischievous, watchful eyes, Puyol has run the ranch for most of her life. She never married and has no children. Wright, Castro and I join her on a warm evening in June. Her white curls are cropped short and her chestnut skin is creased after years working in the sun. She wears old Nikes, pearl earrings and a wooden cross around her neck. Puyol is wealthy by Cuban standards and makes no effort to hide it. Her home, a Spanish colonial villa, is ringed with manicured gardens where a fountain of clay pots feeds a bubbling pool. Flamboyán trees form a canopy overhead. In the afternoon sunlight, their fallen leaves look like shriveled tongues of fire.

Dinner that night is plain by American standards but plentiful—platters of roasted potatoes, corn fritters, plantains, rice and beans, all grown on Puyol's land. Piles of food arrive on sterling silver trays. As we eat, the cat-

tle baroness reminisces about the revolution. In 1959, the Cuban government seized and nationalized estates larger than about 1,000 acres. El Alcázar is about 1,500 acres, yet it survived the revolution untouched.

These agrarian reforms were supposed to eliminate the sprawling plantations that enriched wealthy landowners but left their workers, mostly seasonal laborers, impoverished. The law succeeded in its goal, but it had unintended consequences. After their ranches were taken from them, Cuba's cattle kings mostly chose life in exile. Those tasked with managing the confiscated estates had neither the experience nor the skills required.

Perhaps, as Puyol suggests, the ranch survived because of her: She cites an exemption to Cuba's agrarian reform laws, which left especially productive ranches immune to expropriation, but that didn't stop cadres of government enforcers from confiscating many of them anyway. Puyol says she fought hard with the authorities to keep El Alcázar. Her close ties to the Castros probably didn't hurt either.

Puyol grew up in Birán, the Castros' hometown. With fondness, she recalls a youth spent riding horses and fishing alongside Ramón, Fidel and Raúl Castro. Even then, she remembers, they seemed preordained to rule. "Today, they run all of Cuba like they used to run Birán," she whispers with a smile. Puyol's dogs were gifts from Raúl, she says, as were her two televisions. She owns four cars, gifts from Fidel, and a signed copy of *The Strategic Counteroffensive in the Sierra Maestra to Santiago de Cuba*, one of his many books. When the revolution came, Fidel came looking for supplies, Puyol says. She provided them: gasoline, food, equipment and whatever else they wanted. Even so, not even the Puyols were left alone entirely. "Many, many ranches were ruined after the revolution," Puyol says between sips of chilled tamarind juice. Among them, an 8-million-acre estate seized from her father.

"What happened to it?" I ask.

With a knowing look, she draws her thumb across her throat. "A shoemaker," she says, "can't run a ranch." Today, it's 8 million acres of dirt.

"IF YOU GET MEAT AND THE POLICE FIND OUT, THEY WILL CLOSE THE RESTAURANT."



"WE'RE GOING TO USE THESE COWS TO BREAK THE BLOCKADE."

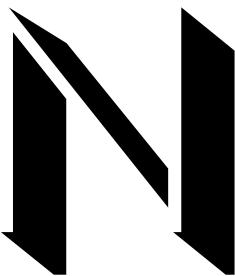
But not El Alcázar. Her land is pristine, quite unlike any I have seen in Cuba. Her pastures are green, her cattle are healthy and well-fed, and her workers get to eat beef. Small farms and ranches similar to Puyol's have sprouted up all over the country since Raúl Castro's wave of agrarian reforms beginning in 2007. According to one recent paper by researchers at the University of Havana and the City University of New York's Lehman College, about 70 percent of the country's arable land is now in private hands. If Puyol's ranch is any indication, that's a good trend. And it's a good opportunity for American businesspeople, such as Wright, who are permitted to sell the Cubans agricultural commodities.

THROWBACK: El Alcázar is the rare ranch still functioning as it did pre-Castro.

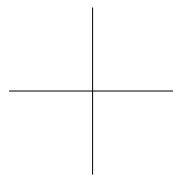
Before we leave, she invites us to see her land on horseback. Wright, Ángel Castro and I follow a cadre of Cuban cowboys and a herd of Puyol's mares as they bolt out of their corral and up-country. The horses wade through the Rio Contramaestre, where a pair of young women cavort in the muddy water. We follow the herd until we reach a hill the Cubans call *la vista*. Wright lights another cigar, and we watch the sunset. "Maria Antonia's ranch is the model," he says, "for the future of Cuban agriculture."

I hope he's right. It would be a shame to let Gator's seed go to waste. ■





NEW WORLD

[HYDROGEN](#)[INNOVATION](#)[SPACE](#)[ENVIRONMENT](#)[CLIMATE](#)[WILDLIFE](#)**GOOD SCIENCE**

HUMANS BITE BACK

Scientists have genetically modified mosquitoes to be malaria-resistant

+
A BETTER BUG:
The UC Irvine team worked on the genome of *Anopheles stephensi* mosquitoes, which are a main vector of malaria in India. But they believe the technique would work in other species as well.

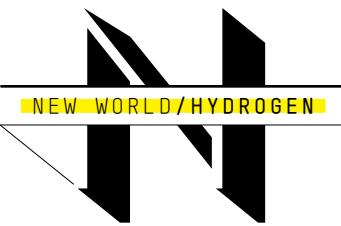
MALARIA WILL strike more than 200 million people this year, according to the World Health Organization, and will kill nearly half a million. Although the disease can be treated, in some parts of the world, the medicines needed are often unavailable. And worse, the parasite that causes malaria is becoming more and more resistant to the drugs we have to fight it.

That's why several research groups are working on genetic modifications to mosquitoes that would prevent them from spreading the parasite. The latest advance comes from the University of California, Irvine, which has created a mosquito that not only doesn't transmit malaria but also passes on this trait to 99.5 percent of its offspring.

This so-called "gene drive" mechanism is quite an achievement, since many traits inherited in a more typical fashion go to only a fraction of an organism's offspring, says researcher Anthony James. His team used a gene-editing technique called CRISPR to insert two genes into the insect's genome to confer malarial resistance. They used two modified mouse immune

genes, which bind to the malaria parasites and prevent them from recognizing their host and moving around in the mosquito's body. "You can think of it as [being] blinded," James says. As a result, the parasite cannot get into the animal's salivary gland and, therefore, doesn't make it into humans when the mosquitoes bite. And, given the high rate of inheritability, the resistance would theoretically spread quickly throughout a population once introduced.

James says the innovation needs to be tweaked slightly before being applied in the field, and introducing genetically modified organisms into the wild would require regulatory approval from foreign countries where malaria is endemic. There is some concern, for example, about what might happen if the gene drive were to make its way into another organism. Perhaps an undesirable gene might spread through a whole population of animals, wiping out a species. But this seems unlikely, James says, and at this point the potential benefits of helping to stop malaria appear to outweigh the risks. ■



AUTO'S H-BOMB

Japan's largest automakers are betting big on an unproven technology. But are hydrogen fuel cell cars the future or just hype?

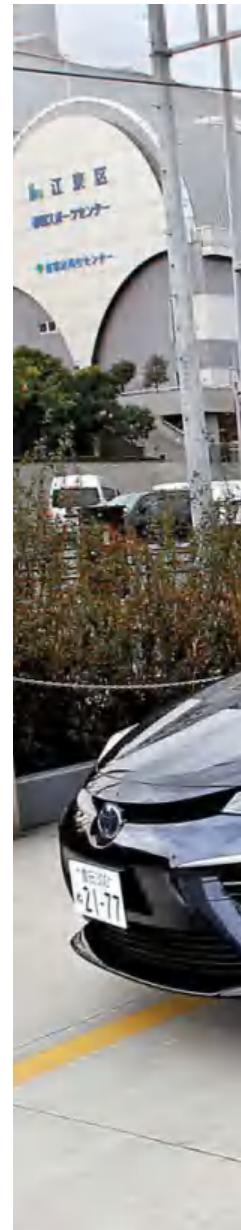
"WE ARE GETTING ready to embrace a hydrogen society," said Tokuo Fukuichi, president of Lexus International, as he unveiled the brand's new concept car at the Tokyo Motor Show in late October. Sleek and shiny, the LF-FC could have been just another of the many luxury sports cars glittering under the convention center's fluorescent lights. But the overflow crowd didn't come to look at sheet metal. The real draw lay closer to the chassis: a fuel cell stack that powers the car by converting hydrogen into electricity. Unlike gasoline engines, which send a noxious cocktail of gases out the tailpipe, fuel cells emit nothing but water vapor.

Lexus, a division of Toyota, was not alone in using the Tokyo stage to promote a hydrogen-powered future. The parent company showed the FCV Plus, which plugs into a local power grid to generate electricity for a community, while Mercedes-Benz displayed its Vision Tokyo minivan, which runs on a combination of hydrogen and battery power. Honda presented a close-to-production version of its Clarity Fuel Cell, expected to go on sale next year, and Toyota brought its Mirai (the Japanese word for "future"), which launched in Japan in December 2014 as the world's first mass-produced fuel cell vehicle and began deliveries in California this past October.

The enthusiasm for fuel cells goes beyond their futuristic sci-fi appeal. Environmentalists have called to cut dependence on oil, and world leaders are now deliberating on how to meet June's G-7 summit agreement that promises to phase out fossil fuel by the end of the century. Achieving that goal will require a massive remake of the global auto fleet. But the technology for doing so is at a crossroads.

Electric vehicles, such as the Tesla Model S, Chevrolet Volt and Nissan Leaf, have gotten the glory as early alternatives to the internal combustion engine, but several carmakers, led by Toyota and Honda, say fuel cells will change how we drive, letting us bypass gasoline entirely and travel for longer distances than electric vehicles would before they'd need to recharge. Instead of gas, drivers will fill up on hydrogen at their local refueling station and go more than 300 miles on a single tank. Toyota already has 1,500 orders in Japan for its first 400 Mirais, and the waitlist stretches two to three years.

The call for hydrogen assumes, however, that fuel cell drivers will live near a hydrogen fueling station. Right now, that's pretty unlikely. In the U.S., there are only 15 of them: 13 in California and one each in Connecticut and South Carolina. And only four of the stations in California operate at the retail level, accepting credit card



BY
JACLYN TROP
Twitter: @jaclyntrop



READY TO LAUNCH:
The Mirai, a new fuel cell car made by Toyota. Even though it's built on fairly untested technology, the Mirai is already popular: 1,500 people placed orders for the first 400 cars for sale.

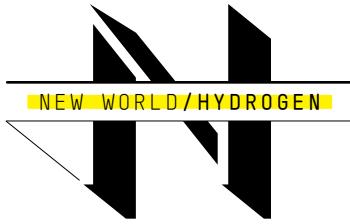
payments. The remaining stations are part of a legacy network that can be accessed only by using a code from the carmakers (Toyota, Honda, Hyundai, Mercedes and General Motors) that have put small, experimental fleets on the road over the past 10 years.

On the other hand, the growth of the refueling network is quickly accelerating, in large part because the California Energy Commission has earmarked hundreds of millions of dollars to develop the network and hydrogen storage systems. By the end of 2016, California will see 46 stations open. That's still well short of the 100 stations—located in five early-adopter regions, including Silicon Valley and the West Los Angeles and Santa Monica area,

TOYOTA HAS RECEIVED 1,500 ORDERS FOR THEIR FIRST 400 MIRAI'S.

and clustered so they're at most six minutes' driving distance apart—the commission has determined the state needs to make the technology viable, but it's a start.

Meanwhile, other states are beginning to support fuel cell vehicles. The governors of Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont have committed to putting more zero-emission vehicles,



and the refueling infrastructure to support them, on the road by 2025.

Carmakers are chipping in too. Last year, Honda and Toyota funded the startup FirstElement Fuel based in Newport Beach, California, with \$13.8 million and \$7.3 million, respectively, to help cover the cost of stations in California. Toyota has also committed to funding 12 stations along the New York-Boston corridor. But "if the stations don't come as we expect," says Craig Scott, Toyota North America's national manager of the Advanced Technologies Group, "we're all going to be sweating."

The stakes are even higher in Japan, where Prime Minister Shinzo Abe has promised to show off "a hydrogen society" for those attending Tokyo's 2020 Summer Olympics. The country is leading the global charge by offering subsidies of up to \$25,000 to consumers purchasing fuel cell vehicles and encouraging its government agencies to order them for their fleets. But even Japan is likely to fall short of its fuel cell goals. The country wanted to build 100 stations by March; 28 are up so far, and 53 more are anticipated to be completed over the next six months.

As with much new technology, fuel cell vehicles may live or die on the dent they make in people's wallets. Without the sort of subsidies offered by Japan, the prices for fuel cell vehicles could cause sticker shock—even though the cars are less expensive than the Tesla Model S, whose base version starts just below \$70,000. In the U.S., the Mirai starts at \$58,325 (including destination fee). Honda said the Clarity FCV will be priced at around \$63,000 in Japan, but it hasn't announced the price for the U.S. The cost of the components is likely to decrease as automakers produce more volume, but for now the cars are a luxury buy.

Toyota has allotted close to 1,000 units for the U.S. launch of the Mirai and says it expects U.S. deliveries to reach 3,000 by the end of 2017. In addition to California, it'll sell the Mirai in

five states in the Northeast, despite the fact that the region currently has only the one Connecticut station. Honda's aspirations are slightly smaller, with an initial target of 200 units for the Clarity Fuel Cell in Japan. It has not announced a launch date for the U.S. Meanwhile, last year, with an apparent eye to the future, Hyundai began leasing a fuel cell version of its Tucson compact SUV that travels 265 miles on a single tank to several dozen customers in Southern California. "We have mass-production capabilities to meet future market demand," says a Hyundai spokesman.

The East Asian automakers' decision to invest billions of dollars in researching and building hydrogen-powered vehicles is at odds with the approach of others that have championed battery power instead. Tesla Motors CEO Elon Musk is a vocal critic of fuel cells, famously deriding them as "fool cells" and a marketing ploy that's unlikely to gain traction. But those on the side of fuel cells have their own qualms with battery-powered autos: "The issue for the EV is that it's costly, heavy and takes a long time to charge," says Mitsuhsisa Kato, Toyota's executive vice president of R&D. Toyota briefly partnered with Tesla to produce an EV version of its RAV4 SUV, but sales were disappointing. Now Toyota is encouraging new entrants to the fuel cell mar-

PRIME MINISTER SHINZO ABE HAS PROMISED TO SHOW OFF "A HYDROGEN SOCIETY" TO VISITORS AT TOKYO'S 2020 SUMMER OLYMPICS.

ketplace, opening its more than 5,600 fuel cell patents to other companies and hoping to benefit from a network effect that will create a density of fueling stations that attracts more customers.

Competitors are watching the Japanese carmakers from the sidelines. General Motors has been developing its own fuel cell prototypes, while Nissan and Daimler AG (Mercedes's parent company) are partnering on a design that Nissan CEO Carlos Ghosn said could be on the market as early as 2020. "There's that old joke that fuel cells are always five years away," says Devin Lindsay, an analyst for IHS Automotive in Southfield, Michigan. "But now it looks like we're a lot closer." ■

Newsweek

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NEVER SAY NIMMER

Two brothers plan to turn Berlin's filthy Spree Canal into a giant swimming pool

THE RIVER SPREE flows northwest for 250 miles from the Lusatian Mountains, near the Czech border, to central Berlin. From there, at the eastern tip of Spree Island, it splits like a wishbone into two arms and heads west. Tourist boats frequent the arm that is wider and passes popular destinations like the DDR Museum, which shows what life was like in East Germany under Soviet rule. The other arm, Spree Canal, is narrower and has been largely out of use for more than a century. The area around it is generally residential. And several times a year, to prevent the sewers from flooding during rain, pipes redirect untreated sewage into the canal.

Tim and Jan Elder, brothers who grew up in West Germany, envision turning that polluted spot where the Spree splits into the starting point for what they are calling “Flussbad Berlin”: a mile-long system of plants and pipes that would filter the water and convert a stretch of the canal into a giant swimming pool. The Flussbad project (the word means “river pool”) sounds ambitious, even quixotic, but last year the German government granted the brothers \$4.8 million to test their new filter design.

On a rainy day in November, the Elders meet at a small pedestrian bridge near the river’s fork. A horde of teens have just vacated the spot, leaving behind a half-dozen coffee cups. Below the bridge is the Historic Harbor, where antique boats with names like *Elisabeth*, *Libelle*

and *Andreas* bob in the canal, peppered with fallen yellow leaves. Tim and Jan are wearing blue jeans and identical navy raincoats, which Jan insists he bought first. Call it the uniform of Realities:United, the art, architecture and technology studio they run.

Tim says the idea for Flussbad came in 1997, when he and Jan worked near the Spree. They built a riverside discotheque and man-made beach; *The New York Times* said the makeshift club had “a jagged energy, an edginess, an openness that leave[s] a piece of formerly eastern riverside property in the hands of an association of artists.” The author also mentioned seeing “several young men urinate into the dark water.”

“We experienced how super attractive people found [it] to be with the river,” Tim says of that venture. That got them imagining how the forgotten waterway slicing through Berlin might become a recreational Eden at a time when the city was becoming congested and more built up. The Elders wanted to give people a way to jump in the river, but many of those people were skeptical, telling them the idea was “sufficiently unrealistic” and “totally nuts.”

In the almost two decades since, cities around the world have embraced their waterways and postindustrial spaces, part of a global push for sustainable development. “What you see in the Flussbad project is echoed in projects worldwide: a focused intervention that respects that



BY
MAX KUTNER
[@maxkutner](https://twitter.com/maxkutner)



GRAND SPREE: In an architectural rendering, locals can be seen swimming in the Spree Canal. Flussbad would create a swimming area as big as 17 Olympic-size pools.

which has been created by previous generations, benefits from natural mechanisms and reinvigorates open spaces for public use," says Rolf Soiron, chairman of the board of the LafargeHolcim Foundation for Sustainable Construction. In 2011 and 2012, LafargeHolcim gave the Elders \$150,000 for Flussbad.

"When we invented it, we didn't see anything that was close," Tim says. Now, Jan adds, "everybody wants to be at the river." In New York City, for example, + Pool aims to be "the world's first water-filtering floating pool," the project designers have said, with special walls that filter water from the East River. (It remains in development.) Swimmers have taken to rivers in cities around the world—even in Basel, Switzerland, where the 1986 Sandoz chemical spill once poisoned the waterway. But Jan says, referring to Flussbad, "As far as I understand,

it's the only project which at that scale really changes the river itself."

Industrial mills used to occupy both sides of Spree Canal, which was a popular shipping lane until 1894, when the city demolished some of the mills and built a lock in the main arm of the river, making it easier for ships to use that route. Decades later, the city demolished a separate lock on the canal, the Elders say, making it nearly impossible to traverse. Since then, the canal has sat mostly unused, still apparently costing Berlin millions of dollars a year to maintain. Though the Spree appears black from afar, when you look down at it close up, it's possible to see to its bottom. But because of the sewage system that dumps human waste into the canal without warning, swimmers risk nausea, vomiting and diarrhea.

In November, the Elders published a 99-page

NATURE'S CHLORINE: The plan would turn a section of the canal into a natural zone, with a plant-and-sand system that naturally filters pollutants so that Berliners down the canal can swim in clean water.

+





feasibility study on how to make the Spree safely swimmable. Flussbad will consist of three sections: a natural zone that would attract fish and wildlife and have recreational spaces; a filtration zone; and a 2,788-foot-long swimming zone through one of the city's most tourist-heavy areas. At the end of the stretch, a weir would keep the unfiltered water from flowing back into the swimming pool.

The most important piece of that puzzle is the plant-and-sand filtration system the brothers have devised (with the help of some engineers). They'll start by digging holes in the river bottom and filling them with permeable sand. As water passes through the sand, a microchemical process cleans it. Planted reeds help keep the sand in place. It's an open system that continually takes in water, cleans it and releases it. Typical filtration systems function more like giant coffee filters, but they need periodic cleaning or replacing; this innovative plant-and-sand filter is all natural and requires no energy. Pollutants get "digested" by what Tim describes as "a film of microlife" around the sand, including bacteria. The system would be able to filter 132 gallons per second.

The process may sound simple, but it requires more than digging holes and planting reeds. Because the Spree tends to flood, Flussbad must also incorporate a complex system of pipes that can allow river water to bypass the filter (and temporarily put swimming on hold). And unless the city updates its sewer system, the project must also implement a drainage system to redirect sewage that would otherwise flow into the canal. It's much more than just "making a garden in the river," Tim says.

Above the filtration zone would be a "natural" zone, which could attract insects like dragonflies and fish such as eel, ide, perch, pike, rudd and silver bream, according to the feasibility study. Currently, Jan says, "wildlife has basically no chance" to survive there. Along the route would be low-lying artificial jetties, lookout spots and bicycle paths.

From the filtration zone, the water would flow into a swimming area the length of 17 Olympic-size pools. That section would have big stairways to the water from the street level, as well as possibly dressing rooms, showers and lockers. The system would flush out the pool water once a day to prevent the formation of blue-green algae, bacteria that can release toxins. This zone would span from the Schlossplatz (where the Humboldt Forum, a re-creation of a 500-year-old Baroque palace that the German Democratic Republic demolished in 1950, is under construction) to



the Bode Museum. For more than half a million Berliners, Flussbad would be the closest natural body of water in which to swim, according to the project's website.

So far, Flussbad has been funded by prize money, grants and individual donations. The Elders won't disclose how much the project will cost—their current estimate could dissuade politicians from supporting it, they say—but they hope the government will foot most of the bill.

Having figured out the science and (most of) the financing, the brothers now face their last obstacle: Berlin bureaucracy. Altering major city infrastructure will require wading through lots of red tape, especially since the canal passes Museum Island, which is part of Spree Island and is a UNESCO World Heritage Site. Critics

"IT'S THE ONLY PROJECT WHICH AT THAT SCALE REALLY CHANGES THE RIVER."

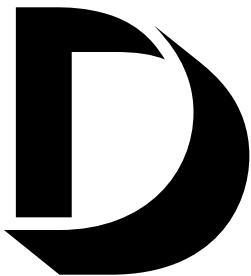
have already bashed the plan to cut stairways into the canal walls, portions of which date back to the 19th century and were designed by famed Prussian architect Karl Friedrich Schinkel.

In public discussions, Tim and Jan have observed that younger Berliners seem more open to the project than the city's older citizens because they understand it is "a substantial aspect of future life," Tim says. Older people, on the other hand, seem to have a harder time understanding "that this is not just a fun-and-nuts thing."

In July, the Elders hosted a swimming competition in the still-unfiltered Spree to draw attention to their project. Around 120 swimmers, wearing yellow bathing caps, jumped into the black water. Tim and Jan each took a dip but spent most of the day watching from the sideline, towels in hand. They both concede they cannot swim. ■



Fritz Hoffman/Redux



DOWNTIME

SPORTS

ART

URBAN RENEWAL

TRAVEL

STYLE

DINING

CESSPOOL OF DREAMS

An effort to restore the most polluted water in America says plenty about what we've done to cities in the past—and what we hope to do to them now

+
LOCH NASTY MONSTER:
Kayakers navigate the murky waters of the Gowanus Canal in Brooklyn, New York. Built in 1869 as a mode of transport, the waterway was named an EPA Superfund site in 2010.

BY
ALEXANDER NAZARYAN
 @alexnazaryan

NEAR THE BANKS of the Gowanus Canal, an exceedingly polluted waterway that wends through brownstone Brooklyn for 2 miles, you can buy a deer fetus for \$230 at the Morbid Anatomy Museum. The bruised little corpse was not fished from the canal, though the bodies of mafiosi used to routinely end up in these murky waters. So did those of dogs and cats.

Also on the canal, where Lenape natives once caught oysters bigger than Minnesota, is a Whole Foods, probably one of the very few in the nation to sit atop a Superfund site. A restaurant called Little Neck is well-regarded for its bivalves; these did not come from the Gowanus, which is rife with toxic chemicals and human waste.

Somewhere near the Gowanus rest the bodies of several hundred soldiers from Maryland who fought off the British during George Washington's retreat in the Battle of Long Island. Histo-

rians think the Marylanders are buried beneath an empty lot, but the owners of the lot won't let them dig it up, so the mystery remains.

In 2007, a Minke whale swam into the mouth of the canal. Locals called it Sludgie. Sludgie languished for two days, then died, apparently from hitting its head on a dock. In 2013, a dolphin wandered into the canal. It also died. In 1950, a shark swam into the Gowanus. It was shot dead by police officers.

In April, an environmental activist named Christopher Swain swam the Gowanus to highlight the waterway's plight. Though he wore plenty of protective gear, his mouth was in direct contact with the canal. "It tasted like mud, poop, ground-up grass and gasoline," Swain said after emerging. "It's just like swimming through a dirty diaper."

The canal may well be a dirty diaper, but it's



also a case study in urban reclamation, one that could have implications from North Hollywood to the South Bronx. As people return to American cities, communities are cleaning up rivers that, polluted by industry and then neglected during suburban flight, have been turned into filth-filled troughs. The impetus is economics as much as environmentalism, with water access having become an urban amenity as coveted as basement wine cellars and climbing walls. It's in our genes. The Neanderthal craved being near rivers as much as the graphic designer in Austin; he just paid a lot less for it.

ON A MURDEROUSLY hot Friday afternoon in August, I took a tour of the Gowanus with Joseph Alexiou, author of the recently published *Gowanus: Brooklyn's Curious Canal*. As far as either one of us can tell, it is the first book-length treatment of the canal. A licensed New York City tour guide who grew up in Long Island, Alexiou is short and energetic and given to cursing with great frequency

“Not everything can be fucking luxury,” he said, in reference to the residential buildings now slowly rising along the banks of the Gowanus. “That’s not how the world works.”

A little later, we stood on the Carroll Street Bridge, a flat span with wooden slats that is one of the last four bridges in the country to retract for passing ships. We looked down into the water, about which the phrase “It looks like shit” can be used in the literal sense. A single maple leaf flowed past, and Alexiou joked that it was the first sign of autumn. But then another shape emanated from underneath the bridge, a translucent thing resting languidly on the surface. A sea creature emerging from the depths? Alas, no. This is the Gowanus, not the Great Barrier Reef. “Look at that,” Alexiou said with awe. “What the fuck is that? That is a king-sized condom.”

Indeed it was. Someone somewhere in Brooklyn flushed it down a toilet, and the prophylactic

entered the ancient sewers of Brooklyn, some of which date back to the Civil War. When it rains, the stormwater enters those sewers, which cannot handle the increased volume, so some of the waste and the surface runoff is dumped into the Gowanus via 11 pipes that deposit 370 million gallons of “combined sewage overflow” into the canal per year.

The Gowanus is not only the most polluted waterway in America but perhaps the most intractable. Fix this and you can fix anything. Many a city has been remade in the image of New Urbanism, Brooklyn among them. But not the Brooklyn directly abutting the Gowanus. With its filth, its neglect, its decay, the Gowanus is a reminder of what we have done to our cities, the indelible scars we have left on the landscape, scars that cold-brew coffee shops and co-working creativity hives cannot fix.

Restoring rivers has often seemed a way to save entire cities, such is the significance we place on water and its health. While the Seine has always been a destination for those visiting Paris, the river itself could, in years past, seem remote from the city—civic symbol more than civic participant. That has been changing with the *nouvelles berges*, a project to return the austere embankments to the people. There are now, the BBC reported, “restaurants and bars, concert spaces, running tracks, a massive black-

“IT TASTED LIKE MUD,
POOP, GROUND-UP GRASS
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JUST LIKE SWIMMING
THROUGH A DIRTY DIAPER.”

board for children to scrawl on, cabins for rental where you can eat with friends, or hold business meetings.” There have even been promises of a swimmable Seine, though that may be an instance of Parisian pride outpacing the realities of public health.

Unwilling to be outdone by its continental rival, London is holding an international “Back to the River” competition that has solicited entries for a new vision of the Thames, a river settled by the Romans 2,000 years ago. Meanwhile, in Germany some want to “renaturize” a dirty stretch of the River Spree flowing through central Berlin, turning part of it into a swimming pool.



TOXIC AVENGER:
Christopher Swain,
an environmental
activist, emerges
from the depths of
the Gowanus, where
he spent nearly an
hour on April 22.



Gowanus presents an especially complex challenge. Just a half-mile from its banks, residential properties routinely sell for millions of dollars. If current efforts by the Environmental Protection Agency (EPA) and others come to fruition, and the floating poop logs make way for otters and marsh grasses, the Gowanus could become the next High Line, the abandoned elevated railroad turned into a park-in-the-sky that revitalized the West Side of Manhattan and became a showcase for green ingenuity that has been replicated the world over. Or the Gowanus could languish in a bureaucratic inertia fostered by developers, community activists, environmentalists and politicians, all of whom want something but not quite the same thing. Already a horror story, the Gowanus serves as

a cautionary tale for those who think that every city, from Akron, Ohio, to Juneau, Alaska, is ready to become the next Austin, Texas, or the next Portland, Oregon, or the next whatever.

MOST EVERYONE agrees that the Gowanus needs to be cleaned up. But the tricky thing is that the Gowanus is not some inert piece of land, like most Superfund sites, waiting patiently for “remediation.” The EPA’s plan for the Gowanus is ambitious and, like most ambitious plans, very expensive. At a cost of \$506 million, the agency will excavate an estimated 588,000 cubic yards of contaminated sediment, then put a cap on the sediment that remains. The EPA is also requiring the city to build retention tanks to handle sewage overflows. That could, the agency estimates, reduce the amount of “sewer solids” heading into the Gowanus by as much as 74 percent.

Others are taking more modest approaches. DlandStudio, the Brooklyn-based architecture and design firm, is starting a demonstration site for the Gowanus Sponge Park on a dead-end street abutting the canal. The sponge part is literal, with native grasses intended to capture surface runoff, preventing it from flowing into the Gowanus or into sewers and, from there, into the canal. The water would be remediated in wetland basins before making its way into the canal. With the proper funds and political will, the Gowanus Sponge Park would be extended as a kind of protective green sleeve around the canal, opening the banks to public access while cleaning up the water.

For now, the Gowanus remains pretty dirty and kind of cool. Every place has a history, but the canal has something rarer: a mythology. To hang out near the Gowanus is to announce an affiliation with the unseemly past, as opposed to the comfortable house-spouse-and-kids future.

I ventured to the Gowanus on a late summer night. Couples lingered on the Union Street bridge, while a crowd gathered in front of Ample Hills, a popular ice cream parlor known for the freshness of its ingredients.

I went into Swan Dive, the new beer garden right on the canal’s edge. I lingered on the outskirts of the space, leaning over the railing and looking down at the water below, ominous and obsidian. The secrets that water held! The toxic sediment harbored centuries of yearning: the yearning of Indian oyster-catchers, Dutch colonists, American revolutionaries, men who toiled on its banks and men who perished in its depths. For centuries, we have been drawn to that water. And though the water is unclean, we are drawn to it still. ■

DEEP END OF THE GENE POOL

Heisman candidate Christian McCaffrey is an impressive athlete, but his grandfather was godlike

IT WAS JUST after midnight on the East Coast as another college football Saturday bled into Sunday. Stanford's tireless Christian McCaffrey was in the midst of his latest herculean performance—300 yards rushing, receiving and returning kicks—when ESPN's cameras cut to his parents, Ed McCaffrey and Lisa Sime, in the stands.

Dave Pasch, ESPN's play-by-play announcer, noted that both are Stanford alums with estimable athletic pedigrees. McCaffrey, a former Pro Bowl wide receiver, won three Super Bowls over the course of a 13-year NFL career. Sime was a former standout soccer player for the Cardinals.

As the cameras returned to the action on the turf, color analyst Brian Griese, who is a retired second-generation NFL quarterback, added a note of commentary. "Lisa's dad, that's the real star of the family," Griese said cryptically.

In the past three months, Christian McCaffrey has gone from virtual unknown to Heisman Trophy candidate. A sophomore who wears No. 5 and is the Pac-12 Conference's most dazzling all-purpose back since Reggie Bush wore that same number at USC a decade ago, McCaffrey averages 241 all-purpose yards per game. That is 30 yards more than anyone else in the nation.

As a high school athlete in Castle Rock, Colorado, McCaffrey led Valor Christian to four state championships while establishing state records for career touchdowns (141) and all-purpose yardage

(8,845). He will likely be a Heisman finalist in his first season as a starter. Yet McCaffrey is humbled by the feats of his grandfather Dave Sime. "I call him 'the Most Interesting Man in the World,'" he says, referencing the gray-bearded Dos Equis pitchman. "Dave just has so many stories."

Everyone in the McCaffrey-Sime clan refers to its 79-year-old patriarch as "Dave." Nobody refers to him as Grandpa. Or Dad. Or Doctor Sime (rhymes with "rim"). No one calls him an Olympic silver medalist, a *Sports Illustrated* cover boy or even Duke University's most outstanding athlete of the 20th century (an actual honor he was accorded in 2010). Or, as he was commonly known six decades ago, "the world's fastest human." How much do they even know? "I was in the fifth grade when my PE teacher told me that my dad had once held the world record in the 100," says Lisa. "That's how I found out."

In the summer of 1960, Sime, who was between his second and third years of medical school at Duke University, traveled to Rome. There, he accompanied the U.S. team physician on rounds while also working as a CIA operative, attempting in vain to persuade Soviet broad jumper Igor Ter-Ovanesyan to defect.

When Sime was not playing doctor or spy, he was busy competing inside the Stadio Olimpico in two events. The red-headed flash earned a silver medal in the men's 100-meter sprint—losing in a photo finish—and he also ran the anchor leg for



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IT RUNS IN THE FAMILY: Dave Sime was called the world's fastest human; 60 years later, his grandson, Christian McCaffrey, left, has a shot at the Heisman Trophy.

the USA's 4x100-meter relay team. In that race, Sime overcame a two-step deficit when he was handed the baton and still broke the tape, but the U.S. forfeited the gold medal due to a handoff outside the zone between two of Sime's teammates.

After racing at an Amateur Athletic Union meet in California in 1956, Sime accepted a friend's invitation to go horseback riding. The Paterson, New Jersey, native had never been in the saddle before. "The horse reared back and fell on my leg," he recalls. "I pulled the muscle as I attempted to free myself."

Sime returned to Durham, North Carolina, where he would play split end on the football team, run track and be an All-ACC outfielder on the Blue Devils baseball team. "I was devastated," says Sime, who had enrolled at Duke on a baseball scholarship and had never even run track before college, "but it was the best worst thing that ever happened to me. When I returned to Duke, I got serious about my pre-med studies."

Neither of Sime's parents graduated from

high school. He graduated in the top 10 percent of his class at the Duke School of Medicine. Over the course of a 40-year career as an ophthalmologist based in South Florida, Sime would be a pioneer in intraocular lens transplants and compile a dazzling roster of patients. Richard Nixon, for one, whose winter home was located just down the

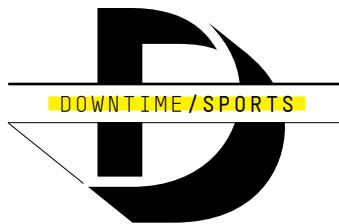
"THAT'S WHY ED AND I GOT TOGETHER: TO BREED FAST WHITE GUYS."

block from Sime's in Key Biscayne. Sportswriting legend Jim Murray. Olympian Eleanor Holm. Dolphins quarterback Bob Griese, who in 1972 donned the corrective lenses Sime designed for him and led Miami to the only undefeated season in NFL history.

"The first time I met [Miami coaching legend] Don Shula, we were packing Bob in ice at halftime to lower his body temperature," says Sime, who worked as a team doctor for the Dolphins in the '70s. The way he recalls the story, Shula growled at him and asked if Griese would be able to return to the game. Sime assured the coach his quarterback would be fine. "First play of the third quarter, Griese fumbles and it's a turnover," says Sime. "Shula glares at me, slams his clipboard to the turf and says, 'Sonofabitch!'"

Griese, who along with Shula remains close with Sime to this day, recalls that Sime never mentioned his previous athletic glory. "I knew about it, but most guys on the team just knew that Dave was the team ophthalmologist," says the two-time Super Bowl champion. "They had no idea that the Dolphins' eye doctor could run a faster 40 than anyone on the team."

The Sime-McCaffrey gene pool is deep enough to induce a case of the bends. Dave has his Olympic silver medal. Ed has his three Super Bowl rings. Billy McCaffrey, Christian's uncle, won



an NCAA championship as a member of Duke's basketball team in 1991, scoring 16 points in the finale vs. Kansas. Christian's older brother, Max, is Duke's leading receiver this season, with 42 receptions. And one of his two younger brothers, Dylan, is a 6-foot-5-inch junior who is the starting quarterback for Valor Christian.

"We're a competitive family," says Lisa, who refuses to utter "the H-word," as she calls it, when discussing Christian's season. "When Ed and I were on our honeymoon, we started playing backgammon. It didn't take us long to realize that if we wanted this marriage to last, we had to cut out the board games."

Sime, who divorced Bettie and later remarried, has long had a fractious relationship with his younger daughter. "I grew up in South Florida and went to college in Northern California," says Lisa. "You do the math."

The two of them, father and daughter, are positive-charged magnet sides. "Lisa and I have had our ups and downs," says Sime, "because she's single-minded, just like me."

Both of them are funny and feisty. In 1998, Lisa, noting her family pedigree and her husband's disarming speed (particularly for a 6-foot-5-inch Caucasian), told *Sports Illustrated*, "That's why Ed and I got together: to breed fast white guys."

Sime, meanwhile, has never been the docile, cardigan-wearing gramps. This is, after all, a man who took up helicopter skiing in his 50s. A recent bout with cancer (metastatic melanoma) that spread to his lungs is in remission. "I'll lick it," Sime says matter-of-factly, as if cancer is no more than an outbreak of dandelions on his front lawn.

Sime does not abide weakness. "I asked Max if he knew how to swim," he says. "He said, 'No.'" Sime hoisted up his grandson and tossed him into the pool. Then he jumped in next to him. "Twenty minutes later, Max knew how to swim," he says with a small hint of triumph in his voice.

Lisa sighs. "That's how I learned how to swim," she says. "My dad threw me in the backyard pool every day for a week. And it worked. I really do miss those other three siblings of mine [who drowned], though."

Lisa is never in over her head, either in a pool or in a battle of wit.



+

SPRINTER, HEAL THYSELF: Sime says his leg injury was the best thing that ever happened to him because it forced him to get serious about his pre-med school work.

Every weekend, Ed McCaffrey and Lisa fly out from Denver International Airport to watch either Max or Christian play at Duke or Stanford, respectively. Sime has yet to see either of his two grandsons play in person at the collegiate level, even though the older one plays for his alma mater and the younger is one of the most captivating players in the game.

"With the cancer now, I don't like to fly so much," he explains. A little while later, he confides that he'd rather watch the games on television. ("Who wants to sit with a bunch of drunks throwing beer at me?")

"I do watch all of Christian's games, though," says Sime. "I take a nap beforehand because they come on so damn late. And I talk to him. I call him 'Snowball' because that's what reminds me of.

"WHO WANTS TO SIT WITH A BUNCH OF DRUNKS THROWING BEER AT ME?"

He's not very big, and he starts off slow. But as he gets rolling downhill, he gets bigger and bigger, faster and faster."

As he continues to go on about his grandson, Sime begins to sound less like the world's fastest human or even the world's most interesting man. "You're going to talk to Christian?" he asks, sounding like the ideal doting granddad. "Say 'hi' to Snowball for me. Tell my Snowball that I love him." **N**



YOU'RE 100% WRONG ABOUT ‘Africa’

GENERALIZING ABOUT A CONTINENT
HURTS MORE THAN JUST FEELINGS

OVER 11 MILLION square miles: That's roughly how much land constitutes Africa, a continent with more than 50 sovereign states, trod by 1.1 billion people who speak thousands of languages. A continent so varied, and with such a deep and complex history, it's the source of some of the earliest advances in mathematics, urban planning, engineering and surgery.

So why are people always telling me that they recently returned “from a visit to Africa”? Or that their lifelong dream is to go on safari in “Africa” one day? Why is this diverse and massive continent constantly referred to as though it were a single country?

“When it comes to Europe, people want to be very specific: *Eastern Europe*, *Western Europe*,” says Kathleen Bomani,

a creative consultant and researcher from the Upanga neighborhood of Dar es Salaam, Tanzania. “We didn't have a Berlin Wall to separate us, but... they get all the nuance!” In talking about the continent, she says, “there's a disregard [where] for so long it's been OK for anyone to refer to it as just ‘Africa,’ a huge landmass. It has to change, and really we need to start doing that ourselves. The onus is on us.”

As South Africans, my family and friends laugh when we're questioned about whether we ever rode elephants to school or spotted a lion in our backyard. Taking pot-shots at ignorance about the continent has been a cornerstone of *Daily Show* host and South African Trevor Noah's comedy, and he even quipped in his first episode that “to a lot of Americans, Africa is

just one giant village full of AIDS, huts and starving children.”

Toyin Falola, a history professor at the University of Texas at Austin who hails from southwest Nigeria, says the narrative of Africa as a hotbed for the “chaotic, the erotic and the exotic” has applied particularly to “Black Africa”—countries in sub-Saharan Africa that international organizations traditionally view as separate from North Africa and the Middle East. Often, people who visit Egypt, Morocco and Algeria say they're traveling to those countries, while people who are going to Nigeria or Tanzania are more likely to say they're en route to “Africa.”

According to Lebogang Mokwena, a South African policy researcher, the problem is often not as glaring

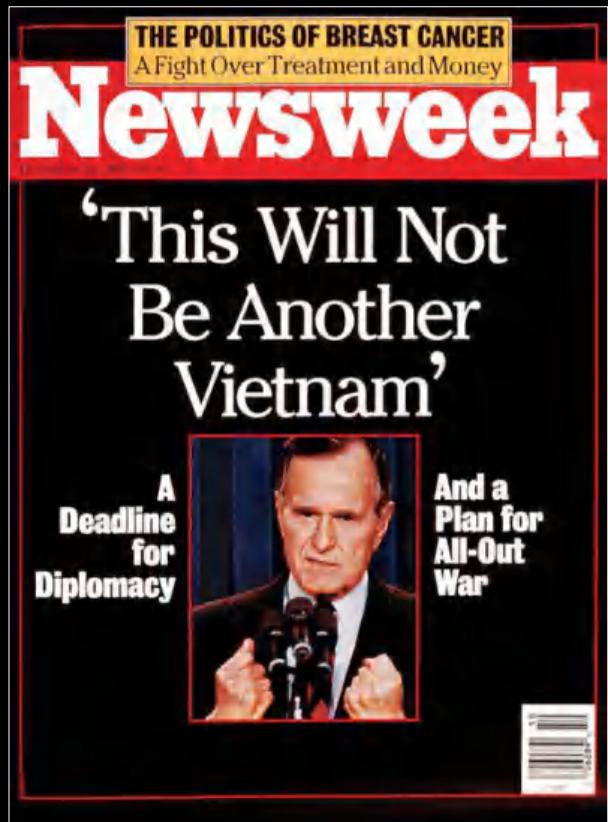
as overt racism but is instead something subtler, such as when people “refer to Africa not as a convenient initial shorthand, but when the sum total of the knowledge of the continent is just that—without a sense of the linguistic, ethnic, cultural, political and other forms of diversity and dissimilarity.”

The argument comes down to the power of words. South Africa is still reeling from the physical and linguistic wounds of people whose lives were destroyed and whose culture and traditions were reduced to racial stereotypes. A little nuance may not heal those old injuries, but as long as dangerous generalizations persist, new ones are inevitable.

BY
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REWIND

25
YEARS



DECEMBER 10, 1990

QUOTING MOLLY LAZAR, A CHICAGO WOMAN WHO PAID FOR HER OWN MAMMOGRAMS EVERY OTHER YEAR WHEN HER INSURANCE COMPANY DIDN'T COVER THEM, IN "THE POLITICS OF BREAST CANCER" BY MELINDA BECK

"If you could do a mammogram on the testes—a testogram—you'd be goddamn

sure that men would be having them every year and that insurance would pay,' Lazar says angrily. 'The insurance companies are run by men. It's shameful.'"